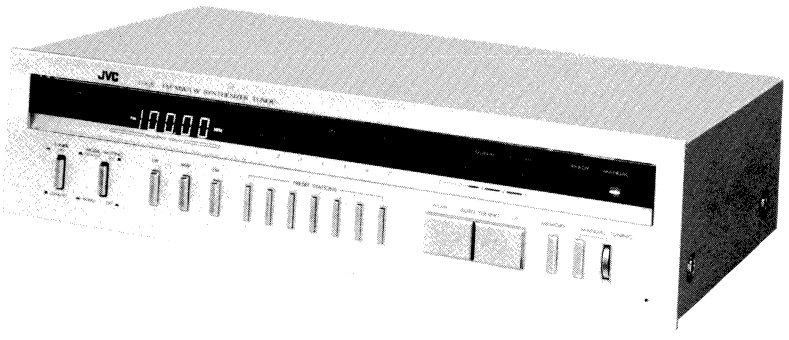
JVC

SERVICE MANUAL

MODEL T-X2L

STEREO TUNER



No. 2515
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WARNING!
When replacing the parts marked with ⚠ , be sure to use the designated parts to ensure safety.

1. Specifications

FM Tuner Section

Tuning range	: 87.55 MHz – 108.00 MHz
Usable sensitivity	: 1.4 μV/75 Ω (14.2 dBf IHF)
50 dB S/N sensitivity (IHF-network)	: Mono 31.2 dBf (10 μV) Stereo 39.2 dBf (25 μV)
Signal-to-noise ratio (IHF-network)	: Mono 67 dB Stereo 63 dB
Distortion at 1 kHz (100 % Mod.) (IHF-network)	: 0.15 % (Mono), 0.3 % (Stereo)
Capture ratio	: 1.5 dB
Alternate channel selectivity	: 65 dB ±400 kHz (IHF)
Image rejection	: 55 dB
IF rejection	: 60 dB
Stereo separation at 1 kHz	: 40 dB
Frequency response	: 20 Hz – 12.5 kHz (+1.0 dB – 6 dB)
Output level	: 600 mV (400 Hz, 100 % Mod.)
Antenna	: 75 Ω unbalanced, 300 Ω balanced

AM Tuner Section	**MW**	**LW**
Tuning range	: 531kHz–1602kHz	150kHz–350kHz
Usable sensitivity	: 500 μV/m (S/N 20 dB)	800 μV/m (S/N 20 dB)
Selectivity (±10 kHz)	: 35 dB	
Antenna	: Ferrite bar antenna	
Dimensions (HxWxD)	: 108 x 420 x 258 mm (4-5/16" x 16-9/16" x 10-3/16")	
Weight	: 4 kg (8.82 lbs.)	

Design and specifications subject to change without notice.

2. Names and Their Functions

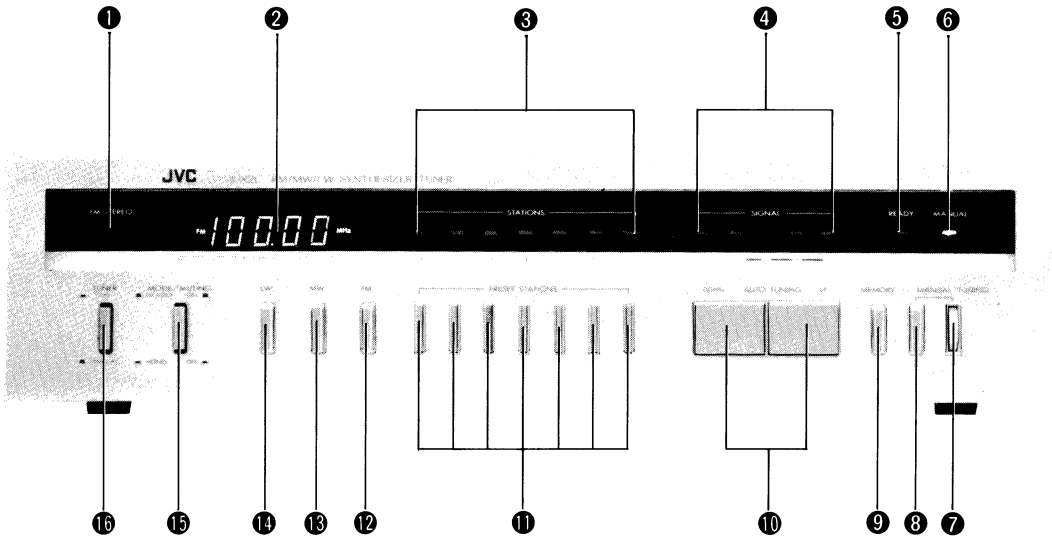


Fig. 1

1. **STEREO indicator**
   This indicator lights when you are tuned to a stereo broadcast with the MODE/MUTING switch set to ON (■).
2. **Frequency indicator**
   The tuned-in frequency is displayed digitally. Five digits (kHz) are displayed for AM (MW/LW) reception and five digits (MHz) are displayed for FM reception.
   Notes: ●When the STATION select button to which no station has been preset is pressed, the frequency indicator displays a random figure.
   ●When a weak station is tuned in, the display of the lowest digit is not stable.
3. **STATIONS indicators**
   The indicator, corresponding to the selected station, lights when one of the STATIONS buttons is pressed.
   Note: When you press the TUNER switch, this indicator sometimes lights, this does not indicate trouble. In this case press the AUTO Tuning switch.
   *LED: Light Emitting Diode.
4. **SIGNAL strength indicator**
   Indicates the strength of the signal being received. Best reception is obtained when all five LEDs* light. Adjust the antenna so that the maximum number of LEDs light.
5. **READY indicator**
   Only while the MEMORY button is pressed, this indicator lights to show that the unit is ready to register the preset stations for memory. While it remains lit (by pressing the MEMORY button), press one of the STATIONS buttons to preset to any desired station.
6. **MANUAL tuning indicator**
   When the MANUAL switch is pressed, this indicator lights to indicate that manual tuning is possible.
7. **MANUAL TUNING knob**
   Manual tuning is possible by this MANUAL TUNING knob and the MANUAL switch. First press the MANUAL switch, then turn the MANUAL TUNING knob to tune-in FM or AM (MW/LW) stations.
8. **MANUAL switch**
   When you use the MANUAL TUNING knob press this switch first. To release the manual tuning, press the UP or DOWN button or STATIONS buttons.
9. **MEMORY button**
   When this button is pressed, the READY indicator lights. When this button is released, the indicator goes out. If the STATIONS button is pressed while this indicator is lighting, the frequency of the station being received is displayed and becomes preset to that channel. When the STATIONS button is pressed after this indicator extinguishes, the frequency of the previously preset station is displayed on the frequency indicator. In that case, perform tuning once again and press the MEMORY button.

10. **AUTO TUNING button**
Press this button for auto tuning to both FM and AM broadcasts.
DOWN: Press this button to change the tuned-in freqency in the direction of decreasing frequencies. The tuned-in frequency changes until the next FM (or AM (MW/LW)) station is pulled in.
UP: Press this button to change the tuned-in frequency in the direction of increasing frequencies. The tuned-in frequency changes until the next FM (or AM (MW/LW)) station is pulled in.
Note: If you hold the button pressed, scanning continues even though the next station is tuned-in. Therefore, use this button for automatic rapid scanning.
When the high or the low end of the frequency is reached with the UP or DOWN button, the frequency display returns to the low or the high end of the frequency, and then scanning starts once again.
If, in some areas other stations having a stronger output than normal are near the station being received, that interfering station may be received repeatedly. In this case, tune in the desired station with the MANUAL TUNING knob.

11. **STATIONS buttons**
These buttons are used to select one of the preset stations or to preset the station for an individual channel. For presetting, press one of these buttons while the READY indicator remains lit by holding the MEMORY button pressed. Then the station which is being received will be "memorized". One of the STATIONS indicators will light to show which channel is in operation.

12. **FM button**
Press to listen to FM broadcasts. A light touch is sufficient for switching.

13. **MW button**
Press to listen to AM (MW) broadcasts. A light touch is sufficient for switching.

14. **LW button**
Press to listen to LW broadcasts. A light touch is sufficient for switching.

15. **MODE/MUTING switch**
OFF (▬): To improve sub-standard reception of FM broadcasts. Stereo broadcasts are monauralized, however, their clarity of reception is improved. In weak signal areas, however, the muting circuit could mute even the signal being received.
ON (■): To eliminate inter-station noise during tuning. Use this position in normal use. Stereo broadcasts are received in stereo and monaural broadcasts are received in mono automatically.

16. **TUNER switch**
ON (▬): Press to ON to listen to broadcasts.
STAND BY (■): When the power cord is plugged into the AC outlet, the preset stations are not subject to cancellation or alteration. The preset data are maintained even in the case of a power failure or when the power cord is disconnected, if the period of non-applied power does not exceed a couple of days.

3. Service Precautions

1. Because the pushbutton switches are incorporated in the front panel, removal of the panel is necessary to replace the switches.
2. Pay attention to handle the fluorescent tube, used for the frequency display section of the logic control board, (TXX-242) very carefully.
3. Remove the bottom board from the rear side to gain access to the tuner board (TXX-248).
See page 17 for removal of the power supply board (TPS-263).

4. Removal Procedures

4-(1) Top and Bottom Plate

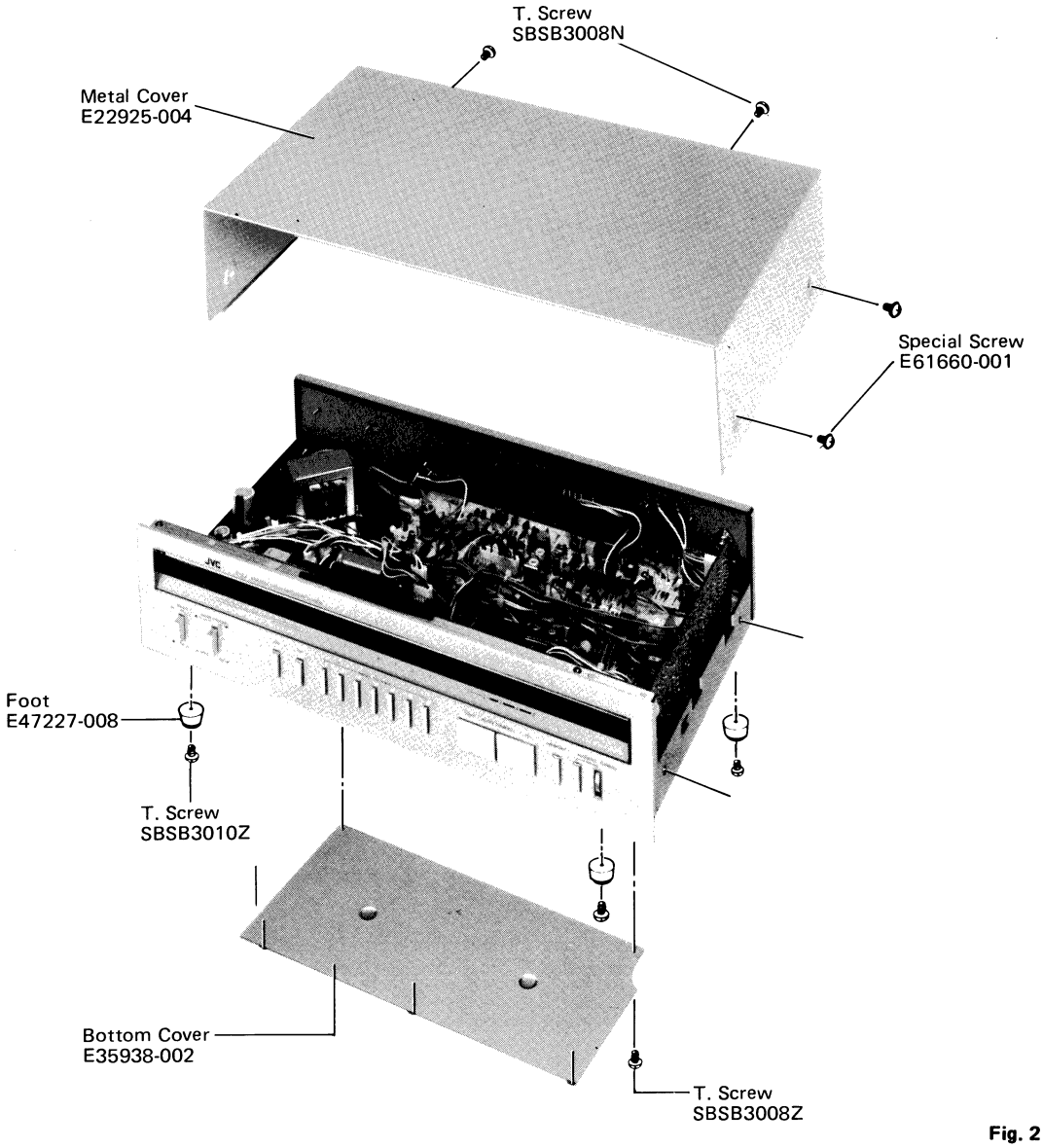


Fig. 2

4-(2) Power Supply (TPS-263H) P.C.Board Ass'y

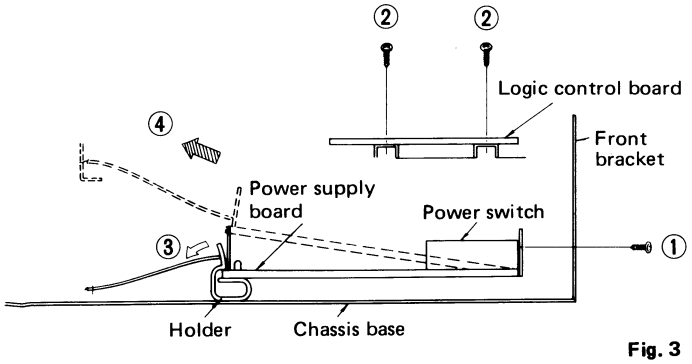


Fig. 3

1. Remove the front panel, then remove the two set screws ① of the power switch.
2. Remove the four set screws ② of the logic control board.
3. Push in the direction of the arrow ③ the holder which secures the power supply board. Then remove the board from the holder.
4. Draw out the power supply board in the oblique direction of the arrow ④ .

Note: For energizing, be sure to secure the logic control board (with the set screws ②).

5. Main Parts Location and Part Numbers

5-(1) Top View

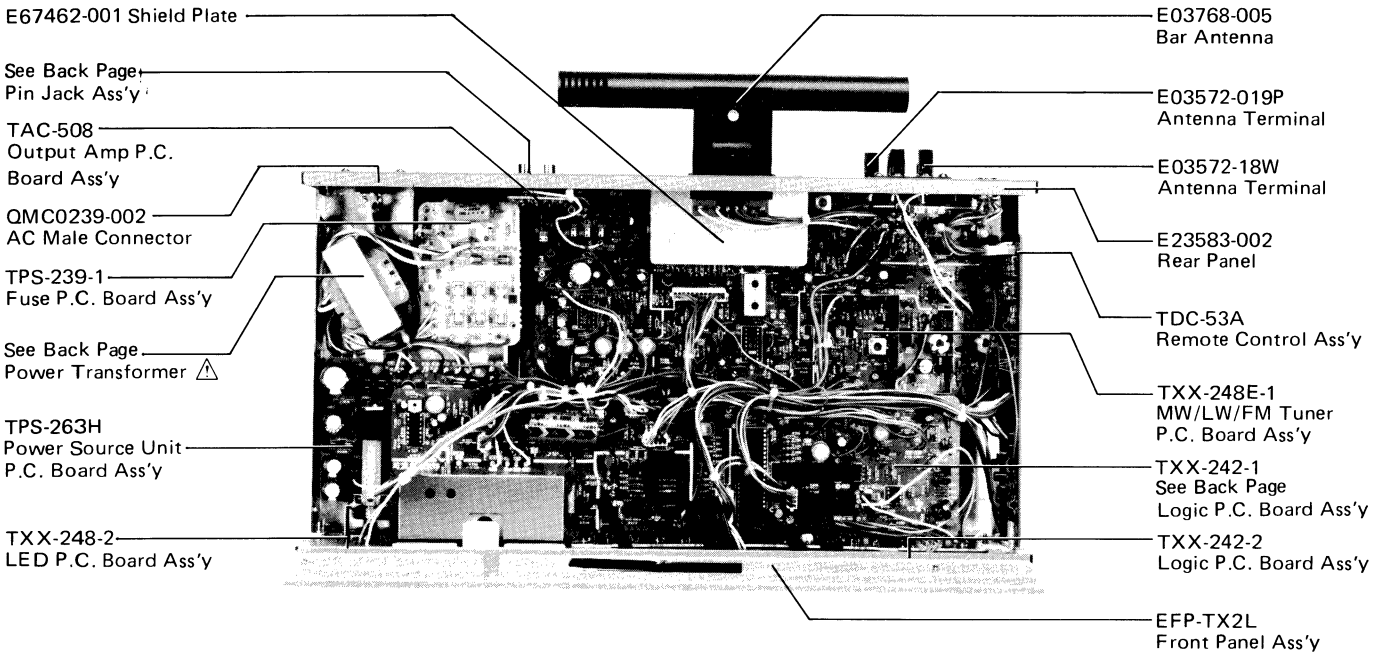


Fig. 4

5-(2) Front View

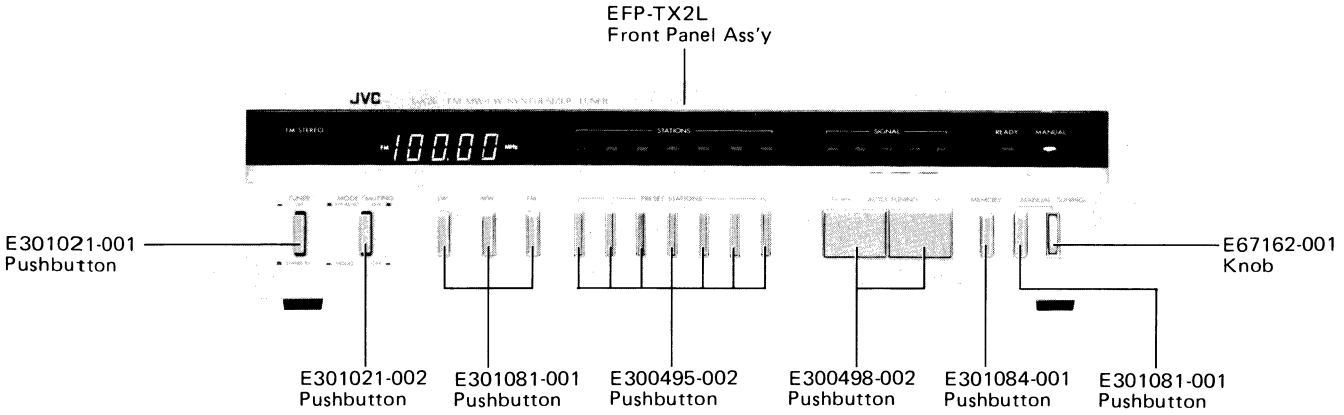


Fig. 5

5-(3) Rear View

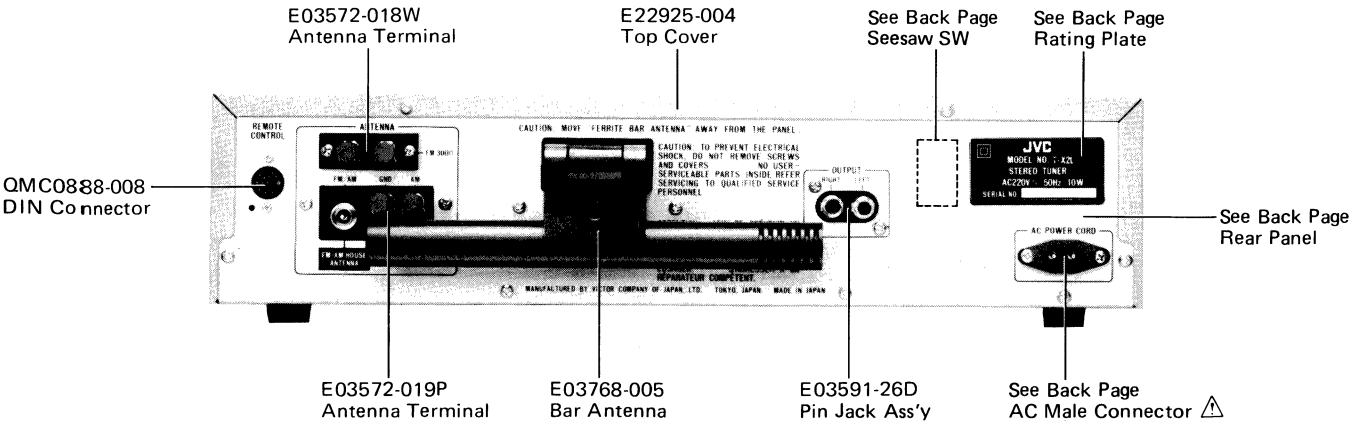


Fig. 6

6. Block Diagram

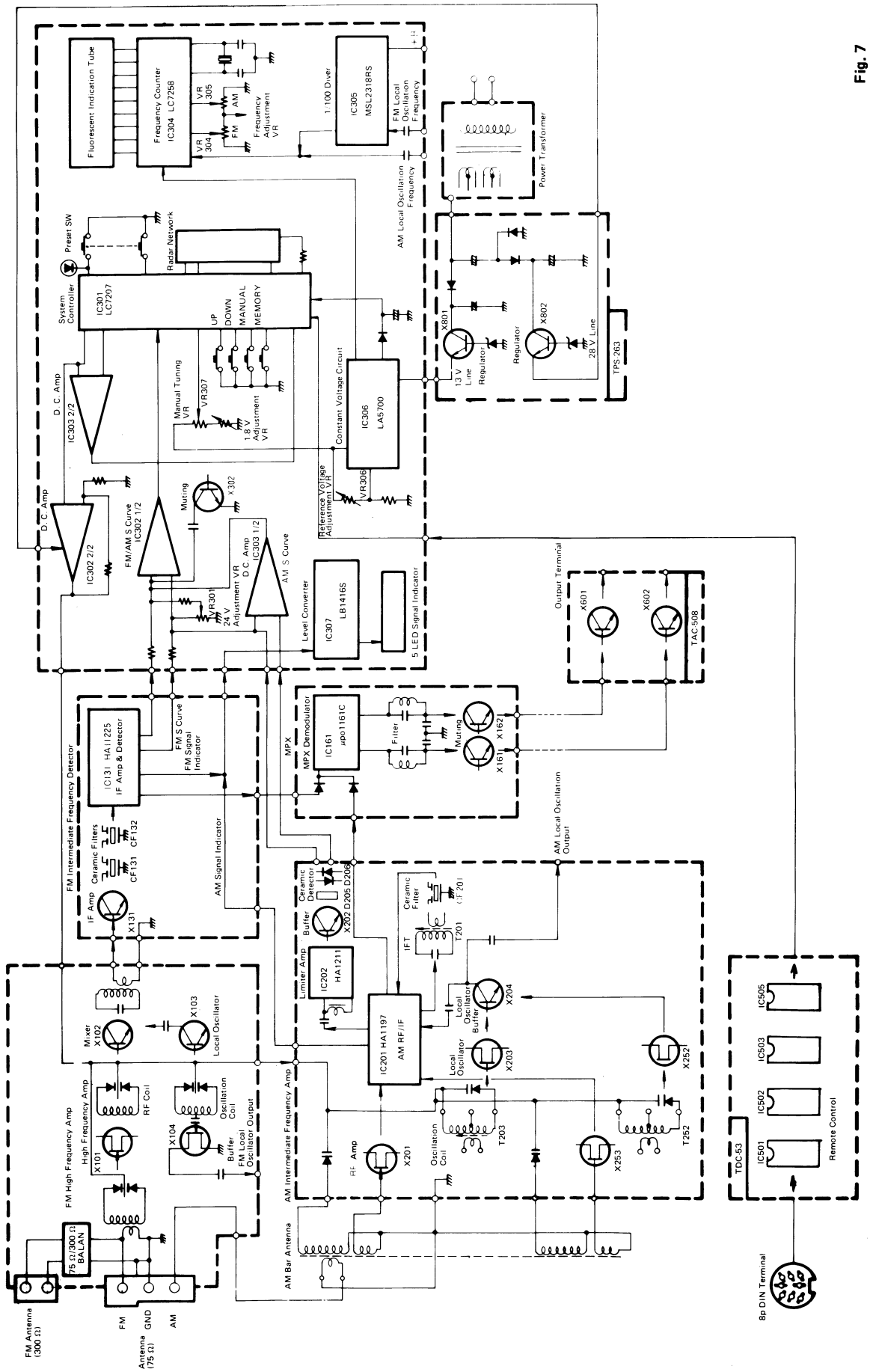


Fig. 7

7. Exploded View and Part Numbers

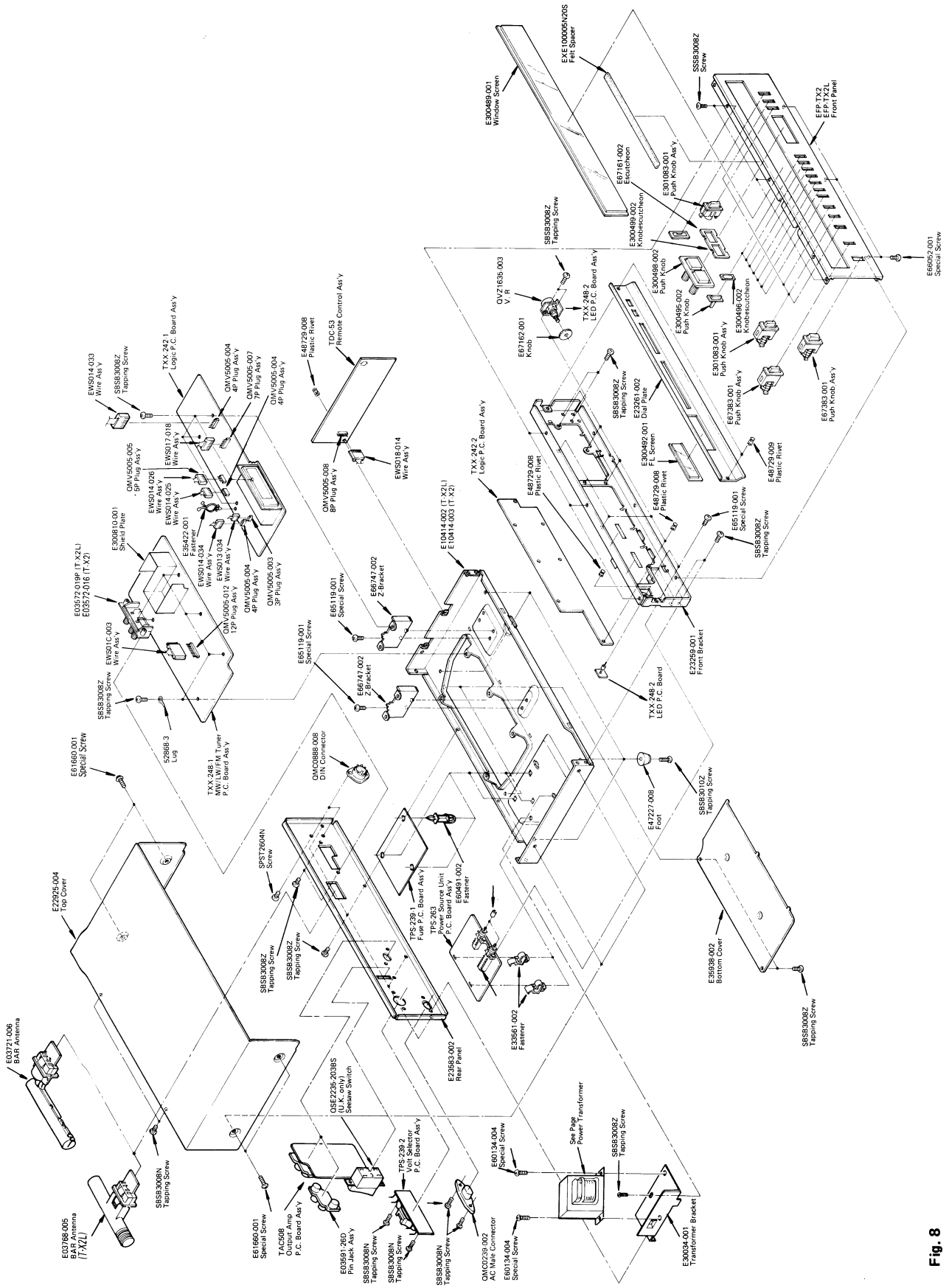


Fig. 8

8. Alignment Procedures

8-(1) FM Section

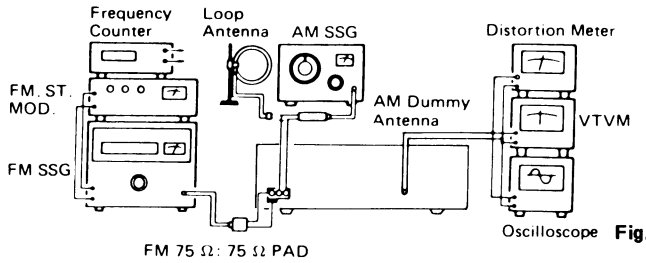


Fig. 9

Step 1. Tuning Voltage Adjustment

Operating conditions	Test points and criteria	Adjustment points
(1) Set to manual operation. Maximize tuning voltage by turning the tuning VR fully upward.	Adjust VR306 so that the voltage at TP-335 is 24 V ±0.1 V. Adjust C125 so that the displayed frequency is 108 MHz.	VR306 C125
(2) Minimize the tuning voltage by turning the manual tuning VR fully downward.	Adjust VR303 so that the voltage at TP-335 is 1.8 V ±0.1 V. Adjust L103 so that the displayed frequency is 87.6 MHz.	VR303 L103
(3)	Repeat 2 or 3 times items (1) and (2), and confirm that the adjustment is positively performed.	

Step 2. Logic S-curve Adjustment

Operating conditions	Test points and criteria	Adjustment points
Adjust with the manual tuning VR set to a position with no signal and which is near the AM 1000 kHz position.	Adjust VR301 so that the voltage between TP-336 and ground is 4.75 V ±0.05 V.	VR301
Adjust with the manual tuning VR set to a position with no signal and which is near the FM 98 MHz position.	Confirm that the voltage between TP-336 and ground is 4.75 V ±0.05 V. If deviated, reconfirm that the voltage between TP-1 and TP-2 is 0.	Primary winding of T131

Step 3. FM Sensitivity Adjustment (SSG signal, 1 kHz, 100 % (75 kHz) modulation)

Operating conditions	Test points and criteria	Adjustment points
(1) A 90 MHz signal of 16 dBf (3 μV/75 Ω) is applied to the FM antenna terminal and received with the manual tuning VR.	Adjust L101, L102 and T101 so that the tuner output distortion is minimum (less than 3 %).	L101 L102 T101
(2) A 106 MHz signal of 16 dBf (3 μV/75 Ω) is applied to the FM antenna terminal and received with the manual tuning VR.	Adjust C103 and C105 so that the tuner output distortion is minimum (less than 3 %).	C103 C105
(3)	Repeat 2 or 3 times items (1) and (2), and confirm that the adjustment is positively performed.	

Step 4. FM Detection Coil Adjustment

Operating conditions	Test points and criteria	Adjustment points
(1) With the manual tuning VR set to a position with no signal and which is near the 98 MHz position.	Adjust the primary winding of T131 so that the voltage between TP-1 and TP-2 is DC 0 V.	Primary winding of T131
(2) A 1 kHz 100 % modulation 98 MHz of 60 dBf is applied to the FM antenna terminal and received with the manual tuning VR.	Adjust the secondary winding of T131 so that the tuner output distortion is minimum (less than 0.5 %).	Secondary winding of T131

Step 5. FM Muting Sensitivity Adjustment

Operating conditions	Test point and criteria	Adjustment point
With the muting switch set to ON, a 98 MHz signal of 5 μV/75 Ω is received with manual tuning VR.	Adjust R158 so that the muting operation goes on.	R158

Step 6. Multiplex Free-run Frequency Adjustment

Operating conditions	Test point and criteria	Adjustment point
With no FM signal and with the MODE/MUTING switch and the muting operation in the ON state, perform the adjustment.	Connect a counter between TP-3 and ground, and adjust to 19 kHz by R185.	R185

Step 7. FM Stereo Separation Adjustment

Operating conditions	Test point and criteria	Adjustment point
A 98 MHz, 60 dBf signal 400 Hz main + subcarrier, 67.5 kHz DEV and 19 kHz pilots and 7.5 kHz DEV modulating signal are applied to the FM antenna terminal and received with manual tuning VR.	Adjust R186 so that the separation of R → L and L → R at the output is maximum. Check the lighting of the stereo radar.	R186

Note: When tuning, connect a center meter between TP-1 and TP-2 and perform the tuning so that the reading of the center meter is 0, thus permitting accurate reception.

Step 8. Displayed Frequency Fine Adjustment

Operating conditions		Test point and criteria	Adjustment point
FM	A 98 MHz signal is applied to the FM antenna terminal and is tuned by the manual tuning VR so that the maximum number of SIGNAL indicator LEDs light, i.e. the DC voltage at S. IND input point 326 is maximum.	Connect a 10 kΩ resistor between TP-342 and ground, and adjust VR304 so that the display is 98 MHz and 0 characters do not flicker.	VR304

8-(2) MW (LW) Section

Step 1. MW (LW) Reception Frequency Band Adjustment

Operating conditions	Test points and criteria	Adjustment points
(1) Minimize tuning voltage by turning the tuning VR fully downward.	Adjust T203 (T252) so that the frequency displayed on the indicator is 525 kHz (145 kHz).	T203 (T252)
(2) Maximize the tuning voltage by turning the tuning VR upward.	Adjust C234 (C266) so that the frequency displayed on the indicator is 1605 kHz (355 kHz).	C234 (C266)
(3)	Repeat items (1) and (2), and check the adjustment.	

Step 2. MW (LW) Sensitivity Adjustment

Operating conditions	Test points and criteria	Adjustment points
(1) Locate a 600 kHz (160 kHz) signal with the manual tuning VR.	Adjust the AM bar antenna so that the tuner output is maximum.	AM bar antenna
(2) Locate a 1400 kHz (355 kHz) signal with the manual tuning VR.	Adjust C205 (C253) so that the tuner output is maximum.	C205 (C253)
(3)	Repeat Items (1) and (2), and check the adjustment.	

Step 3. Displayed Frequency Fine Adjustment

Operating conditions		Test point and criteria	Adjustment point
MW (LW)	A 1000 kHz (250 kHz) signal is applied to the AM bar antenna and is tuned by the manual tuning VR so that the maximum number of SIGNAL indicator LEDs light, i.e. the DC voltage at S. IND input point 326 is maximum.	Connect a 10 kΩ resistor between TP-342 and TP-343, and adjust VR305 so that the display is 1000 kHz (250 kHz) and the character for 0 at the first digit does not flicker.	VR305

9. Printed Circuit Board Ass'y and Parts List

9-(1) TDC-53 Remote Control P.C. Board Ass'y

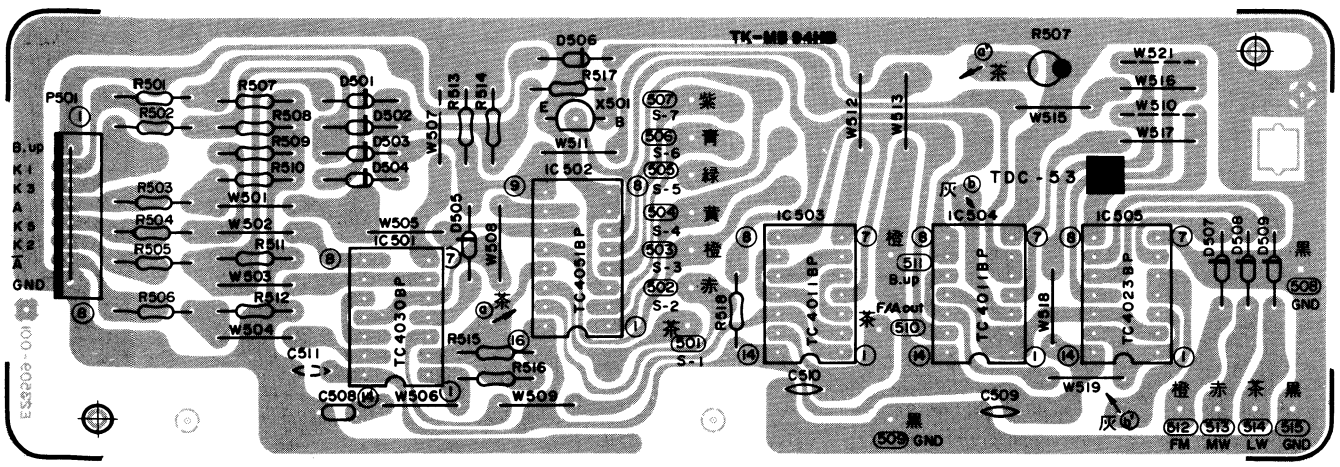


Fig. 10

Transistor

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X501	2SC458(D)	0.2 W	230 MHz	Silicon	Hitachi

Integrated Circuits

Item No.	Part Number	Rating	Description	
		PD		Maker
IC501	TC4030BP	300 mW	I.C.	Toshiba
IC502	TC4051BP	—	"	"
IC503	TC4011BP	300 mW	"	"
IC504	TC4011BP	300 mW	"	"
IC505	TC4023BP	300 mW	"	"

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D501	1S2076-31		Silicon	Hitachi
D502	1S2076-31		"	"
D503	1S2076-31		"	"
D504	1S2076-31		"	"
D505	1S2076-31		"	"
D506	1S2076-31		"	"
D507	1S2076-31		"	"
D508	1S2076-31		"	"
D509	1S2076-31		"	"

Capacitors

Item No.	Part Number	Rating		Description
C507	QET51HR-105	1 μF	50 V	Electrolytic
C508	QFM81HJ-223	0.022 μF	"	Mylar
C509	QCF21HP-103	0.01 μF	"	Ceramic
C510	QCF21HP-103	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R501	QRD148J-153S	15 kΩ	1/4 W	Carbon
R502	QRD148J-153S	"	"	"
R503	QRD148J-153S	"	"	"
R504	QRD148J-153S	"	"	"
R505	QRD148J-153S	"	"	"
R506	QRD148J-153S	"	"	"
R507	QRD148J-393S	39 kΩ	"	"
R508	QRD148J-393S	"	"	"
R509	QRD148J-183S	18 kΩ	"	"
R510	QRD148J-393S	39 kΩ	"	"
R511	QRD148J-393S	"	"	"
R512	QRD148J-183S	18 kΩ	"	"
R513	QRD148J-105S	1 MΩ	"	"
R514	QRD148J-105S	"	"	"
R515	QRD148J-104S	100 kΩ	"	"
R516	QRD148J-104S	"	"	"
R517	QRD148J-274S	270 kΩ	"	"
R518	QRD148J-333S	33 kΩ	"	"

9-(2) TPS-239 Fuse P.C. Board Ass'y

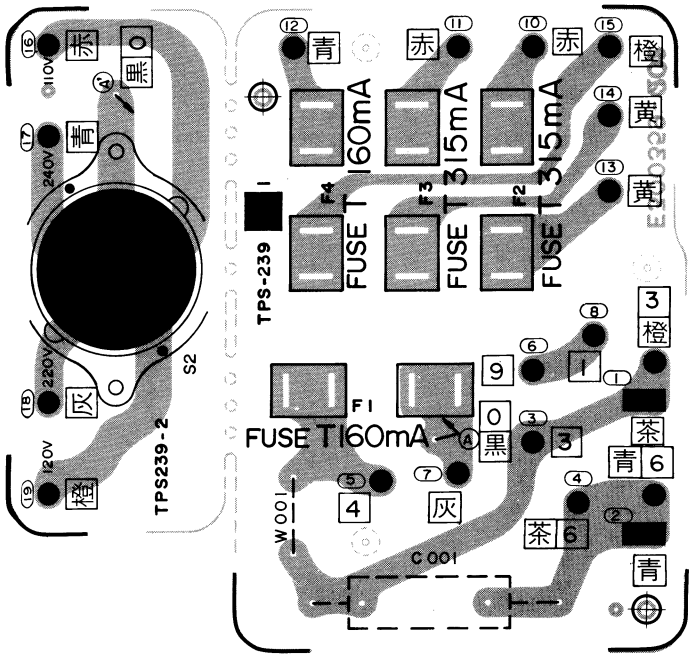


Fig. 11

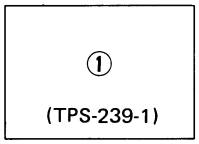


Fig. 12

Item No.	Part Number	Rating	Description
	E43727-001	Tab	
	E43727-002	Tab	
	E48965-002	Fuse Clip	
	E65508-001	Tab	
C1	QFZ9007-103	O.F.T. Capa	:For T-X2LE ⚠
C1	QFZ9007-103BS	O.F.T. Capa	:For T-X2LBS ⚠

9-(3) TXX-242 Logic Function Switches and Fluodisplay P.C. Board Ass'y

This Printed Circuit Board varies according to area employed. See table below.

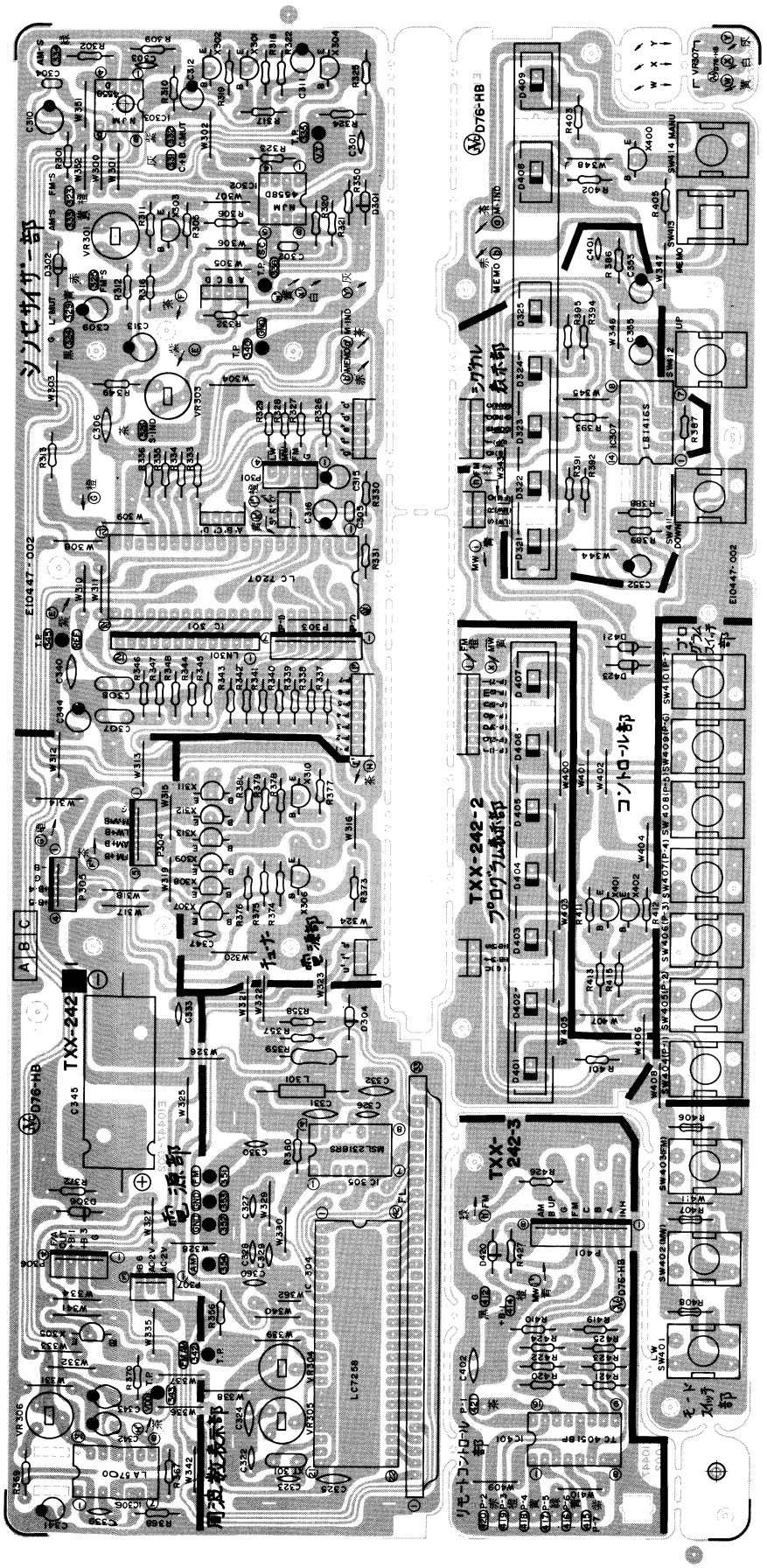


Fig. 13

Each Individual P.C. Board Location

① TXX-242-1
Logic P.C. Board Ass'y

② TXX-242-2
Logic P.C. Board Ass'y

Fig. 14

Note (1):
The specific symbols (赤 , 黒 , 白 , ... etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X301	2SC458(C,D)	0.2 W	230 MHz	Silicon	Hitachi
X302	2SC458(C,D)	"	"	"	"
X303	2SC458(C,D)	"	"	"	"
X304	2SC458(C,D)	"	"	"	"
X305	2SD655F	0.5 W	250 MHz	"	" ⚠
X306	2SC458(D)	0.2 W	230 MHz	"	"
X307	2SC458(D)	"	"	"	"
X308	2SD655(F)	0.5 W	250 MHz	"	" ⚠
X309	2SD655(F)	"	"	"	" ⚠
X310	2SC458(D)	0.2 W	230 MHz	"	"
X311	2SC458(D)	"	"	"	"
X312	2SC458(D)	"	"	"	"
X313	2SC458(D)	"	"	"	"
X400	2SA1029(C,D)	"	200 MHz	"	"
X402	2SC458(D)	"	230 MHz	"	"

Integrated Circuits

Item No.	Part Number	Rating	Description	
		Pc		Maker
IC301	LC7207	0.3 W	I.C.	Sanyo
IC302	NJM4558D	0.5 W	"	JRC
IC303	JNM4558D	"	"	"
IC304	LC7258	0.4 W	"	Sanyo
IC305	MSL2318RS	0.01 W	"	Oki
IC306	LA5700	1 W	"	Sanyo ⚠
IC307	LB1416S	1.3 W	"	"

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D301	RD6, 8EB3	6.8 V 0.5 W	Z Diode	NEC ⚠
D302	1S2076-31		Silicon	Hitachi
D304	RD5,1EB2	5.1 V 0.5 W	Z Diode	NEC ⚠
D306	1S2076-31		Silicon	Hitachi
D321	TLG205		LED	Toshiba
D322	TLG205		"	"
D323	TLG205		"	"
D324	TLG205		"	"
D325	TLG205		"	"
D401	TLG205		"	"
D402	TLG205		"	"
D403	TLG205		"	"
D404	TLG205		"	"
D405	TLG205		"	"
D406	TLG205		"	"
D407	TLG205		"	"
D408	TLG205		"	"
D409	TLG205		"	"
D420	1S2076-31		Silicon	Hitachi

Coils & Transformers

Item No.	Part Number	Rating	Description
L301	E03695-001	2.2 mH.	Shoke Coil

Capacitors

Item No.	Part Number	Rating		Description
C301	QCS31HJ-470Z	47 pF	50 V	Ceramic
C302	QFM31HK-472Z	4700 pF	"	Mylar
C303	QCS31HJ-100Z	10 pF	"	Ceramic
C304	QFM31HK-222Z	2200 pF	"	Mylar
C305	QFM31HK-682Z	6800 pF	"	"
C306	QFM31HK-104Z	0.1 μF	"	"
C307	QFM31HK-473Z	0.047 μF	"	"
C308	QFM31HK-473Z	"	"	"
C309	QEB51HM-224	0.22 μF	"	Low Peak Current Electrolytic
C310	QET61CR-476ZM	47 μF	16 V	Electrolytic
C311	QET61AR-476ZM	"	10 V	"
C312	QET61ER-106ZM	10 μF	25 V	"
C313	QET61HR-226ZM	22 μF	50 V	"
C315	QET61ER-106ZM	10 μF	25 V	"
C316	QEB51EM-225	2.2 μF	"	Low Peak Current Electrolytic
C322	QCS31HJ-270Z	27 pF	50 V	Ceramic
C323	QCS31HJ-270Z	"	"	"
C324	QCF31HP-223Z	0.022 μF	"	"
C325	QCF31HP-223Z	"	"	"
C326	QCF31HP-103Z	0.01 μF	"	"
C327	QCF31HP-103Z	"	"	"
C328	QCF31HP-103Z	"	"	"
C329	QCS31HJ-470Z	47 pF	"	"
C330	QCF21HP-102	1000 pF	"	"
C331	QCF31HP-223Z	0.022 μF	"	"
C332	QCF31HP-223Z	"	"	"
C333	QCF31HP-223Z	"	"	"
C339	QCS31HJ-470Z	47 pF	"	"
C340	QCF31HP-223Z	0.022 μF	"	"
C341	QET61HR-475Z	4.7 μF	"	Electrolytic
C342	QET61CR-226Z	22 μF	16 V	"
C343	QET61ER-106Z	10 μF	25 V	"
C344	QET61ER-106Z	"	"	"
C345	QET21AR-688H	6800 μF	10 V	"
C347	QCF31HJ-223Z	0.022 μF	50 V	Ceramic
C352	QET61HR-105ZM	1 μF	"	Electrolytic
C353	QET61ER-106ZM	10 μF	25 V	"
C355	QET61CR-106ZM	"	16 V	"
C360	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C401	QCF31HP-103Z	0.01 μF	"	"
C402	QCF31HP-103Z	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R301	QRD141J-563SY	56 kΩ	1/4 W	Carbon
R302	QRD141J-563SY	"	"	"
R305	QRD141J-104SY	100 kΩ	"	"
R306	QRD141J-104SY	"	"	"
R309	QRD141J-334SY	330 kΩ	"	"
R310	QRD141J-104SY	100 kΩ	"	"
R311	QRD141J-224SY	220 kΩ	"	"
R312	QRD141J-334SY	330 kΩ	"	"
R313	QRD141J-103SY	10 kΩ	"	"
R316	QRD141J-103SY	"	"	"
R317	QRD141J-223SY	22 kΩ	"	"
R318	QRD141J-103SY	10 kΩ	"	"
R319	QRD141J-103SY	"	"	"
R320	QRD141J-472SY	4.7 kΩ	"	"
R321	QRD141J-155SY	1.5 MΩ	"	"
R322	QRD141J-103SY	10 kΩ	"	"
R323	QRD141J-104SY	100 kΩ	"	"
R324	QRV144F-2003	200 k	"	CMF
R325	QRV144F-1003	100 k	"	"
R326	QRD141J-820SY	82 Ω	"	Carbon

Resistors

Item No.	Part Number	Rating		Description
R327	QRD141J-474SY	470 kΩ	"	"
R328	QRD141J-474SY	"	"	"
R329	QRD141J-474SY	"	"	"
R330	QRD141J-184SY	120 k	"	"
R331	QRD141J-364SY	360 kΩ	"	"
R332	QRD141J-682SY	6.8 kΩ	"	"
R333	QRD141J-474SY	470 kΩ	"	"
R334	QRD141J-474SY	"	"	"
R335	QRD141J-474SY	"	"	"
R336	QRD141J-474SY	"	"	"
R337	QRD141J-184SY	180 kΩ	"	"
R338	QRD141J-184SY	"	"	"
R339	QRD141J-184SY	"	"	"
R340	QRD141J-184SY	"	"	"
R341	QRD141J-184SY	"	"	"
R342	QRD141J-184SY	"	"	"
R343	QRD141J-184SY	"	"	"
R344	QRV144F-1203	120 k	"	CMF
R345	QRD141J-562SY	5.6 kΩ	"	Carbon
R346	QRD141J-225SY	2.2 MΩ	"	"
R347	QRD141J-155SY	1.5 MΩ	"	"
R348	QRD141J-225SY	2.2 MΩ	"	"
R349	QRD141J-561SY	560 Ω	"	"
R350	QRD141J-103SY	10 kΩ	"	"
R354	QRD141J-103SY	"	"	"
R355	QRD141J-182SY	1.8 kΩ	"	"
R356	QRD141J-103SY	10 kΩ	"	"
R357	QRD141J-822SY	8.2 kΩ	"	"
R358	QRD141J-822SY	"	"	"
R359	QRG017J-121S	120 Ω	1 W	Oxide Metal Film⚠
R360	QRD141J-223SY	22 kΩ	1/4 W	Carbon
R367	QRD141J-223SY	"	"	"
R368	QRD141J-472SY	4.7 kΩ	"	"
R369	QRD141J-562SY	5.6 kΩ	"	"
R370	QRD141J-222SY	2.2 kΩ	"	"
R372	QRD141J-472SY	4.7 kΩ	"	"
R373	QRD141J-103SY	10 kΩ	"	"
R374	QRD141J-223SY	22 kΩ	"	"
R375	QRD141J-123SY	12 kΩ	"	"
R376	QRD141J-123SY	"	"	"
R377	QRD141J-103SY	10 kΩ	"	"
R378	QRD141J-394SY	390 kΩ	"	"
R379	QRD141J-123SY	12 kΩ	"	"
R380	QRD141J-123SY	"	"	"
R386	QRD141J-472SY	4.7 kΩ	"	"
R387	QRD141J-153SY	15 kΩ	"	"
R388	QRD141J-104SY	100 kΩ	"	"
R389	QRD141J-153SY	15 kΩ	"	"
R391	QRD141J-470SY	47 Ω	"	"
R392	QRD141J-470SY	"	"	"
R393	QRD141J-470SY	"	"	"
R394	QRD141J-470SY	"	"	"
R395	QRD141J-470SY	"	"	"
R401	QRD141J-561SY	560 Ω	"	"
R402	QRD141J-561SY	"	"	"
R403	QRD141J-561SY	"	"	"
R405	QRD141J-103SY	10 kΩ	"	"
R406	QRD141J-152SY	1.5 kΩ	"	"
R407	QRD141J-152SY	"	"	"
R410	QRD141J-103SY	10 kΩ	"	"
R411	QRD141J-103SY	"	"	"
R412	QRD141J-103SY	"	"	"
R413	QRD141J-103SY	"	"	"
R415	QRD141J-103SY	"	"	"
R419	QRD141J-222SY	2.2 kΩ	"	"

Resistors

Item No.	Part Number	Rating		Description
R420	QRD141J-103SY	10 kΩ	"	"
R421	QRD141J-223SY	22 kΩ	"	"
R422	QRD141J-103SY	10 kΩ	"	"
R423	QRD141J-223SY	22 kΩ	"	"
R424	QRD141J-103SY	10 kΩ	"	"
R425	QRD141J-223SY	22 kΩ	"	"
R426	QRD141J-102SY	1 kΩ	"	"
R427	QRD141J-102SY	"	"	"

Others

Item No.	Part Number	Rating	Description
LN301	ERGS10B-103		10Bit Ladder Network
SW401	ESP0001-003		Push Switch
SW402	ESP0001-003		"
SW403	ESP0001-003		"
SW404	ESP0001-003		"
SW405	ESP0001-003		"
SW406	ESP0001-003		"
SW407	ESP0001-003		"
SW408	ESP0001-003		"
SW409	ESP0001-003		"
SW410	ESP0001-003		"
SW411	ESP0001-003		"
SW412	ESP0001-003		"
SW413	QSP0410-003		"
SW414	ESP0001-003		"
VR301	QVP4A0B-104	100 k 0.15 W (B)	Variable
VR303	QVP4A0B-471	470 Ω " "	Variable
VR304	QVP4A0B-103	10 k " "	"
VR305	QVP4A0B-103	10 k " "	"
VR306	QVP4A0B-222	2.2 k " "	"
VR307	QVZ1635-003	10 k 0.1 W (B)	"
XT301	E03737-006	Fundamental 4.0 MHz	X. Tal
	ELU0001-002	F.L.	F.L. Tube
	E300490-001	LED Holder	
	E300491-001	"	
	E300560-001	Shield Cover	
	E300857-001	Fastener	
	E437272-002	Tab	
	E66672-001	L-Bracket	
	QMV5005-004	4P Plug Ass'y	
TPS	QMV5005-004	"	
VOL	E66672-001	L-Bracket	

9-(4) TXX-248 FM/AM Tuner and Indicator P.C. Board Ass'y

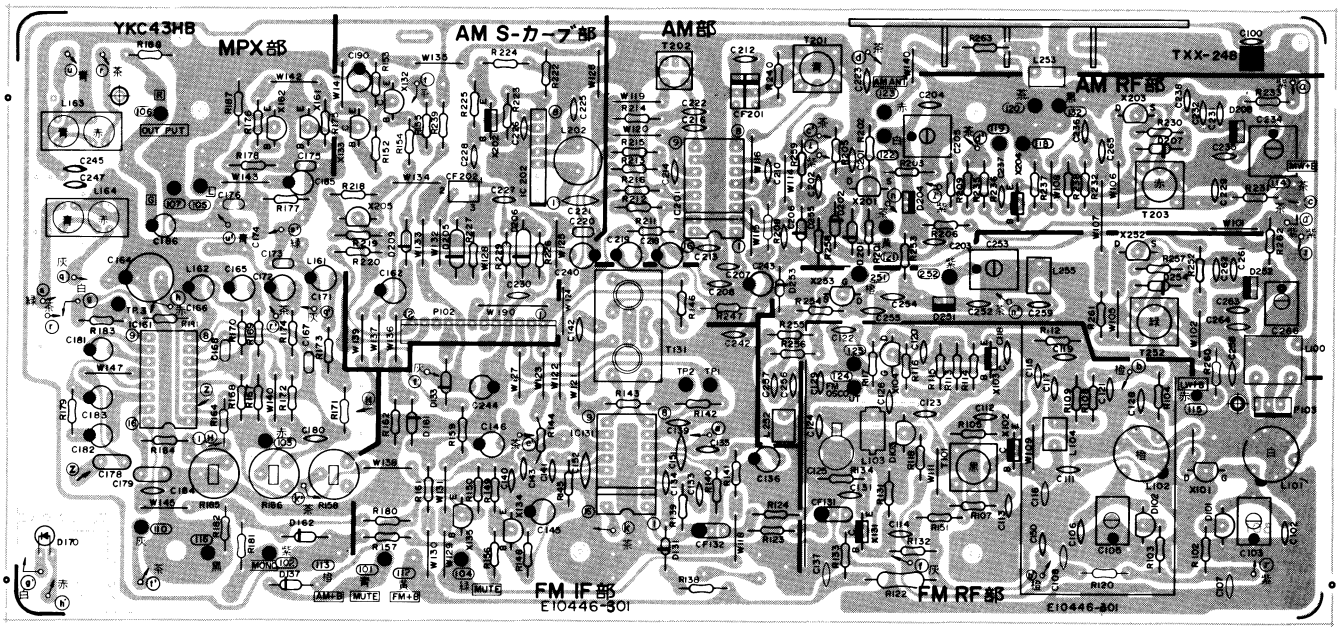


Fig. 15

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X101	2SK49F	0.072W	(200MHz)	FET	NEC
X102	2SC535(B)	0.1 W	940 MHz	Silicon	Hitachi
X103	2SC1342(C)	"	"	"	Sanyo
X104	2SK49F	0.072W	(200MHz)	FET	NEC
X131	2SC535(B,C)	0.1 W	940 MHz	Silicon	Hitachi
X132	2SC458(C,D)	0.2 W	230 MHz	"	"
X133	2SA1029(C,D)	"	200 MHz	"	"
X134	2SC458(C,D)	"	230 MHz	"	"
X135	2SC458(C,D)	"	"	"	"
X161	2SD655(E,F)	0.5 W	250 MHz	"	"
X162	2SD655(E,F)	"	"	"	"
X201	2SK105(F,H)	0.25 W	(10 MHz)	FET	NEC
X202	2SC461(B,C)	0.2 W	230 MHz	Silicon	Hitachi
X203	2SK105(F,H)				
X204	2SC461(B,D)	0.2 W	230 MHz	Silicon	Hitachi
X205	2SK68(K)	0.25 W	(10 MHz)	FET	NEC
X252	2SK105(F,H)	"	"	"	"
X253	2SK105(F,H)	"	"	"	"

Integrated Circuits

Item No.	Part Number	Rating	Description	
		Pc		Maker
IC131	HA11225	0.59 W	I.C.	Hitachi
IC161	UPC1161C	0.4 W	"	NEC
IC201	HA1197	0.45 W	"	Hitachi
IC202	HA1211	0.2 W	"	"

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D101	1SV55		V.Cap. Diode	Hitachi
D102	1SV55		"	"
D103	1SV55		"	"
D131	1S2076-31		Silicon	"
D133	1S2076-31		"	"
D137	1S2076-31		"	"
D161	1S2076-31		"	"
D162	1S2076-31		"	"
D170	TLR206	0.056 W	L.E.D.	Toshiba

Diodes

Item No.	Part Number	Rating	Description	
				Maker
D201	1S2076-31		Silicon	Hitachi
D202	1S2076-31		"	"
D205	1S188FM		Germa-nium	Sanyo
D206	1S188FM		"	"
D207	1S2076-31		Silicon	Hitachi
D208	PT096	0.1 W (KV1226)	V.Cap. Diode	Toko
D209	1S2076-31		Silicon	Hitachi
D252	PT-096	0.1 W (KV1226)	V.Cap Diode	Toko
D253	1S2076-31		Silicon	Hitachi
D254	1S2076-31		"	"
D255	1S2076-31		"	"

Coils & Transformers

Item No.	Part Number	Rating	Description
L100	E03177-005		BALUN
L101	E03477-56		RF Coil
L102	E03477-039		"
L103	E03806-002		"
L104	E03522-1R5KY		Choke Coil
L161	Y00118-103		Ferrite Inductor
L162	Y00118-103		"
L163	E03427-020		MPX LPF Coil
L164	E03427-020		"
L202	Y00118-102		Ferrite Inductor
L252	E03522-101KY		Choke Coil
L253	E03522-2R2KY		"
L255	E03522-391KY		"
T101	E03078-48		FM IFT
T131	E03793-001		FM DET
T201	E03613-017		AM IFT
T202	E03062-39		"
T203	E03079-40		AM OSC Coil (MW)
T252	E03079-41		AM OSC Coil (LW)

Capacitors

Item No.	Part Number	Rating		Description
C100	QCS21HJ-161	160 pF	50 V	Ceramic
C102	QCS31HJ-100Z	10 pF	"	"
C103	QAT2001-004M	"	"	Trimmer
C105	QAT2001-004M	"	"	"
C106	QCS31HJ-100Z	"	"	Ceramic
C107	QCF31HP-103Z	0.01 μF	"	"
C108	QCF31HP-103Z	"	"	"
C111	QCS31HJ-3R0Z	3 pF	"	"
C112	QCF31HP-103Z	0.01 μF	"	"
C113	QCF31HP-103Z	"	"	"
C114	QCF31HP-223Z	0.022 μF	"	"
C115	QCT25CH-3R0Z	3 pF	"	"
C116	QCS21HJ-180	18 pF	50 V	"
C117	QCS31HJ-151Z	160 pF	"	"
C118	QCT25UJ-220Z	22 pF	"	"
C119	QCT25UJ-150Z	15 pF		"
C120	QCF31HP-103Z	0.01 μF	50 V	"
C121	QCF31HP-103Z	"	"	"
C122	QCS31HJ-101Z	100 pF	"	"
C123	QCT26UJ-7R0	7 pF	"	"
C124	QCT25SH-120Z	12 pF	"	"
C125	QAT3001-005	10 pF	"	Trimmer
C126	QCT26CH-2R0	2 pF		Ceramic
C128	QCF31HP-103Z	0.01 μF	50 V	"
C129	QCS21HJ-120	12 pF	"	"
C131	QCF31HP-223Z	0.022 μF	"	"
C133	QCF31HP-223Z	"	"	"
C134	QCF31HP-223Z	"	"	"
C135	QCS31HJ-330Z	33 pF	"	"
C136	QET61HR-475Z	4.7 μF	"	Electrolytic
C137	QCF31HP-223Z	0.022 μF	"	Ceramic
C139	QCF31HP-223Z	"	"	"
C140	QCC31EM-473Z	0.047 μF	25 V	
C141	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C142	QCF31HP-223Z	"	"	"
C143	QCF31HP-223Z	"	"	"
C145	QET61HR-225Z	2.2 μF	"	Electrolytic
C146	QET51ER-106	10 μF	25 V	"
C150	QCC21EM-473	0.047 μF	"	Ceramic
C151	QCC21EM-473	"	"	"
C152	QCC21EM-473	"	"	
C162	QET61HR-475Z	4.7 μF	50 V	Electrolytic
C164	QET51CR-108M	1000 μF	16 V	"
C165	QET51ER-106	10 μF	25 V	"
C166	QET61ER-106Z	"	"	"

Capacitors

Item No.	Part Number	Rating		Description
C167	QFM31HK-102Z	1000 pF	50 V	Mylar
C167	QFM31HK-222Z	2200 pF	"	"
C168	QFM31HK-102Z	1000 pF	"	"
C168	QFM31HK-222Z	2200 pF	"	"
C171	QET51HR-225	2.2 μF	"	Electrolytic
C171	QET51HR-474	0.47 μF	"	"
C172	QET51HR-474Z	"	"	"
C172	QET61HR-225Z	2.2 μF	"	"
C173	QFM31HJ-182Z	1800 pF	"	Mylar
C174	QFM31HJ-182Z	"	"	"
C175	QFM31HK-222Z	2200 pF	"	"
C175	QFM31HK-332Z	3300 pF	"	"
C176	QFM31HK-222Z	2200 pF	"	"
C176	QFM31HK-332Z	3300 pF	"	"
C178	QFM31HK-473Z	0.047 μF	"	"
C179	QFP31HJ-471	470 pF	"	P.P. Cap
C180	QCS31HJ-101Z	100 pF	"	Ceramic
C181	QEB51HM-224	0.22 μF	"	Low Leak Current Electrolytic
C182	QEB51EM-335	3.3 μF	25 V	"

Capacitors

Item No.	Part Number	Rating		Description
C183	QEB51HM-105	1 μF	50 V	"
C184	QCF31HP-223Z	0.022 μF	"	Ceramic
C185	QET61HR-475Z	4.7 μF	"	Electrolytic
C186	QET61HR-475Z	"	"	"
C190	QET51HR-105M	1 μF	"	"
C201	QCF31HP-223Z	0.022 μF	"	Ceramic
C202	QCF31HP-223Z	"	"	"
C203	QCF31HP-223Z	"	"	"
C204	QCS31HJ-4R0Z	4 pF	"	"
C205	QAT2001-005	15 pF	100 V	Trimmer
C206	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C207	QCF31HP-223Z	"	"	"
C208	QCF31HP-223Z	"	"	"
C210	QCF31HP-223Z	"	"	"
C212	QCS31HJ-560Z	56 pF	"	"
C213	QCF31HP-223Z	0.022 μF	"	"
C214	QCF31HP-223Z	"	"	"
C216	QCF31HP-223Z	"	"	"
C218	QET51HR-105	1 μF	"	Electrolytic
C219	QET61ER-106Z	10 μF	25 V	"
C220	QFM31HK-332Z	3300 pF	50 V	Mylar
C221	QCS21HJ-221	220 pF	"	Ceramic
C222	QFM31HK-102Z	1000 pF	"	Mylar
C223	QCF31HP-223Z	0.022 μF	"	Ceramic
C225	QCF31HP-223Z	"	"	"
C226	QCC31EM-473Z	0.047 μF	25 V	"
C227	QCC21EM-473	"	"	
C228	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C229	QCF31HP-223Z	"	"	"
C230	QCC31EM-473Z	0.047 μF	25 V	"
C231	QCT26CH-271A	270 pF		"
C232	QCT26CH-181A	180 pF		"
C234	QAT2001-005	15 pF	100 V	Trimmer
C235	QCT25RH-180Z	18 pF		Ceramic
C236	QCF31HP-223Z	0.022 μF	50 V	"
C237	QCF31HP-223Z	"	"	"
C238	QCT26CH-150	15 pF	"	"
C240	QFM31HK-563	0.056 μF	"	Mylar
C242	QCF31HP-223Z	0.022 μF	"	Ceramic
C243	QET51CR-476	47 μF	16 V	Electrolytic
C244	QET61HR-105ZM	1 μF	50 V	"
C252	QCS31HJ-330Z	33 pF	"	Ceramic
C253	QAT2001-005	15 pF	100 V	Trimmer
C254	QCF31HP-223Z	0.022 μF	50 V	Ceramic
C255	QCF31HP-223Z	"	"	"
C256	QCS31HJ-181Z	180 pF	"	"
C257	QCF31HP-223Z	0.022 μF	"	"
C258	QCF31HP-223Z	"	"	"
C259	QCF31HP-102Z	1000 pF	"	"
C261	QCT26CH-121	120 pF	"	"
C262	QCT26CH-330	33 pF	"	"
C263	QCT26CH-680A	68 pF	"	"
C265	QCF31HP-223Z	0.022 μF	50 V	"
C266	QAT2001-005	15 pF	100 V	Trimmer

Resistors

Item No.	Part Number	Rating		Description
R102	QRD141J-473SY	47 kΩ	1/4 W	Carbon
R103	QRD141J-473SY	"	"	"
R104	QRD141J-331SY	330 Ω	"	"
R105	QRD141J-102SY	1 kΩ	"	"
R107	QRD141J-331SY	330 Ω	"	"
R108	QRD141J-223SY	22 kΩ	"	"
R109	QRD141J-392SY	3.9 kΩ	"	"
R112	QRD141J-222SY	2.2 kΩ	"	"
R113	QRD141J-103SY	10 kΩ	"	"
R114	QRD141J-682SY	6.8 kΩ	"	"
R115	QRD141J-561SY	560 Ω	"	"
R116	QRD141J-102SY	1 kΩ	"	"
R116	QRD141J-331SY	330 Ω	"	"
R117	QRD141J-105SY	1 MΩ	"	"
R118	QRD141J-473SY	47 kΩ	"	"

Resistors

Item No.	Part Number	Rating		Description
R120	QRD141J-103SY	10 kΩ	1/4 W	Carbon
R122	QRG017J-121S	120 Ω	1 W	Oxide Metal Film ⚠
R123	QRD141J-101SY	100 Ω	1/4 W	Carbon
R124	QRD141J-561SY	560 Ω	"	"
R131	QRD141J-102SY	1 kΩ	"	"
R132	QRD141J-472SY	4.7 kΩ	"	"
R133	QRD141J-221SY	220 Ω	"	"
R134	QRD141J-471SY	470 Ω	"	"
R138	QRD141J-103SY	10 kΩ	"	"
R139	QRD141J-391SY	390 Ω	"	"
R140	QRD141J-473SY	47 kΩ	"	"
R141	QRD141J-123SY	12 kΩ	"	"
R142	QRD141J-271SY	270 Ω	"	"
R143	QRD141J-123SY	12 kΩ	"	"
R144	QRD141J-912SY	9.1 kΩ	"	"
R145	QRD141J-563SY	56 kΩ	"	"
R146	QRD141J-332SY	3.3 kΩ	"	"
R148	QRD141J-563SY	56 kΩ	"	"
R149	QRD141J-103SY	10 kΩ	"	"
R150	QRD141J-472SY	4.7 kΩ	"	"
R151	QRD141J-331SY	330 Ω	"	"
R152	QRD141J-683SY	68 kΩ	"	"
R153	QRD141J-223SY	22 kΩ	"	"
R154	QRD141J-563SY	56 kΩ	"	"
R155	QRD141J-563SY	"	"	"
R156	QRD141J-103SY	10 kΩ	"	"
R157	QRD141J-223SY	22 kΩ	"	"
R158	QVP4A0B-473	47 kΩ	0.15 W	Variable
R159	QRD141J-223SY	22 kΩ	1/4 W	Carbon
R161	QRD141J-393SY	39 kΩ	"	"
R162	QRD141J-153SY	15 kΩ	"	"
R164	QRD141J-273SY	27 kΩ	"	"
R167	QRD141J-223SY	22 kΩ	"	"
R168	QRD141J-223SY	"	"	"
R169	QRD141J-103SY	10 kΩ	"	"
R170	QRD141J-103SY	"	"	"
R171	QRD141J-273SY	27 kΩ	"	"
R171	QRD141J-563SY	56 kΩ	"	"
R172	QRD141J-273SY	27 kΩ	"	"
R172	QRD141J-563SY	56 kΩ	"	"
R173	QRD141J-103SY	10 kΩ	"	"
R173	QRD141J-332SY	3.3 kΩ	"	"
R174	QRD141J-103SY	10 kΩ	"	"
R174	QRD141J-332SY	3.3 kΩ	"	"
R175	QRD141J-223SY	22 kΩ	"	"
R176	QRD141J-223SY	"	"	"
R177	QRD141J-103SY	10 kΩ	"	"
R177	QRD141J-682SY	6.8 kΩ	"	"
R178	QRD141J-103SY	10 kΩ	"	"
R178	QRD141J-682SY	6.8 kΩ	"	"
R179	QRD141J-102SY	1 kΩ	"	"
R180	QRD141J-223SY	22 kΩ	"	"
R181	QRD141J-222SY	2.2 kΩ	"	"
R182	QRD141J-153SY	15 kΩ	"	"
R183	QRD141J-102SY	1 kΩ	"	"
R184	QRD141J-163SY	16 kΩ	"	"
R185	QVP4A0B-472	4.7 kΩ	0.15 W	Variable
R186	QVP4A0B-474	470 kΩ	"	"
R187	QRD141J-104SY	100 kΩ	1/4 W	Carbon
R188	QRD141J-104SY	"	"	"
R191	QRD141J-222SY	2.2 kΩ	"	"
R201	QRD141J-102SY	1 kΩ	"	"
R202	QRD141J-224SY	220 kΩ	"	"
R203	QRD141J-391SY	390 Ω	"	"
R205	QRD141J-102SY	1 kΩ	"	"
R206	QRD141J-222SY	2.2 kΩ	"	"
R206	QRD141J-473SY	47 kΩ	"	"
R208	QRD141J-152SY	1.5 kΩ	"	"
R208	QRD141J-332SY	3.3 kΩ	"	"
R209	QRD141J-561SY	560 Ω	"	"

Resistors

Item No.	Part Number	Rating		Description
R212	QRD141J-103SY	10 kΩ	1/4 W	Carbon
R212	QRD141J-223SY	22 kΩ	"	"
R213	QRD141J-103SY	10 kΩ	"	"
R213	QRD141J-223SY	22 kΩ	"	"
R214	QRD141J-331SY	330 Ω	"	"
R215	QRD141J-103SY	10 kΩ	"	"
R215	QRD141J-392SY	3.9 kΩ	"	"
R216	QRD141J-121SY	120 Ω	"	"
R218	QRD141J-103SY	10 kΩ	"	"
R219	QRD141J-125SY	1.2 MΩ	"	"
R220	QRD141J-563SY	56 kΩ	"	"
R222	QRD141J-331SY	330 Ω	"	"
R223	QRD141J-332SY	3.3 kΩ	"	"
R224	QRD141J-222SY	2.2 kΩ	"	"
R225	QRD141J-681SY	680 Ω	"	"
R226	QRD141J-103SY	10 kΩ	"	"
R227	QRD141J-103SY	"	"	"
R229	QRD141J-332SY	3.3 kΩ	"	"
R230	QRD141J-272SY	2.7 kΩ	"	"
R231	QRD141J-102SY	1 kΩ	"	"
R232	QRD141J-392SY	3.9 kΩ	"	"
R233	QRD141J-473SY	47 kΩ	"	"
R235	QRD141J-472SY	4.7 kΩ	"	"
R236	QRD141J-394SY	390 kΩ	"	"
R237	QRD141J-683SY	68 kΩ	"	"
R238	QRD141J-151SY	150 Ω	"	"
R239	QRD141J-393SY	39 kΩ	"	"
R240	QRD141J-221SY	220 Ω	"	"
R247	QRD129J-151	150 Ω	1/2 W	" ⚠
R252	QRD141J-102SY	1 kΩ	1/4 W	"
R253	QRD141J-222SY	2.2 kΩ	"	"
R254	QRD141J-223SY	22 kΩ	"	"
R255	QRD141J-391SY	390 Ω	"	"
R256	QRD141J-472SY	4.7 kΩ	"	"
R257	QRD141J-472SY	"	"	"
R258	QRD141J-223SY	22 kΩ	"	"
R259	QRD141J-223SY	"	"	"
R260	QRD141J-102SY	1 kΩ	"	"
R261	QRD141J-682SY	6.8 kΩ	"	"
R262	QRD141J-473SY	47 kΩ	"	"
R263	QRD148J-101S	100 Ω	"	"

Others

Item No.	Part Number	Rating	Description
CF131	E03357-009		FM IF Filter
CF132	E03357-009		"
CF201	E03613-019		AM IF Filter
CF202	E03613-018		AM Descriminator
L100	E031775-005		Balum
L163	E03427-020		MAX LPF Coil
L164	"		"
	E03572-019P		ANT Terminal
	E03572-18W		ANT Terminal (300 Ω)
	E10446-301	CIR Board	
	E300810-001	Shield Plate	

9-(5) TPS-263 Power Supply P.C. Board Ass'y

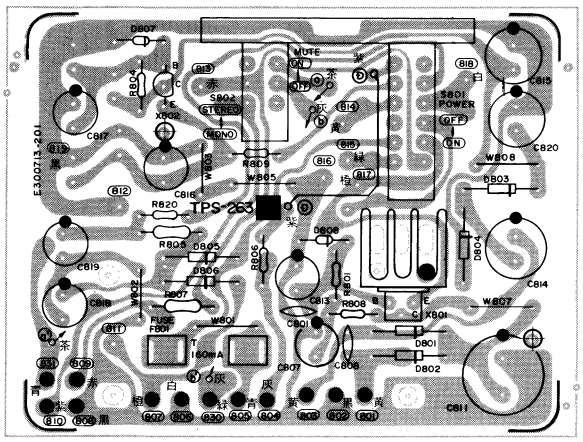


Fig. 16

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X801	2SD330V(E)	20 W	8 MHz	Silicon	Sanyo ⚠
X802	2SD438(F)	0.9 W	100 MHz	"	" ⚠

Diodes

Item No.	Part Number	Rating		Description	
					Maker
D801	ERB12-02RKL1			Silicon	Fuji ⚠
D802	ERB12-02RKL1			"	" ⚠
D803	ERB12-02RKL1			"	" ⚠
D804	ERB12-02RKL1			"	" ⚠
D805	ERB12-02RKL1			"	" ⚠
D806	ERB12-02RKL1			"	" ⚠
D807	RD30EB3	30.0 V	0.5 W	Z Diode	NEC ⚠
D808	RD13EB3	13.0 V	"	"	" ⚠

Capacitors

Item No.	Part Number	Rating		Description
C801	QCF21HP-103	0.01 μF	50 V	Ceramic
C807	QET51ER-107	100 μF	25 V	Electrolytic
C808	QCF21HP-103	0.01 μF	50 V	Ceramic
C811	QET51VR-228H	2200 μF	35 V	Electrolytic
C813	QET51CR-227	220 μF	16 V	"
C814	QET51HR-227H	"	50 V	"
C815	QET51JR-227H	"	63 V	"
C816	QET51VR-107H	100 μF	35 V	"
C817	QET51VR-107H	"	"	"
C818	QET50JR-477	470 μF	6.3 V	"
C819	QET50JR-477	"	"	"
C820	QET51JR-227H	220 μF	63 V	"

Resistors

Item No.	Part Number	Rating		Description
R801	QRD148J-561S	560 Ω	1/4 W	Carbon
R804	QRD148J-272S	2.7 kΩ	"	"
R804	QRD148J-332S	3.3 kΩ	"	"
R805	QRD129J-150	15 Ω	1/2 W	"
R806	QRD129J-102S	1 kΩ	"	" ⚠
R807	QRZ0052-100	10 Ω	"	" ⚠
R808	QRD148J-102S	1 kΩ	1/4 W	"
R809	QRD129J-100S	10 Ω	1/2 W	" ⚠
R809	QRG017J-100S	"	1 W	Oxide Metal Film ⚠
R820	QRD148J-101S	100 Ω	1/4 W	Carbon ⚠

Others

Item No.	Part Number	Rating	Description
S801	QSP0239-052		Tuner SW, Mode/Muting SW
	E48965-002		Fuse Clip

9-(6) TAC-508 Output P.C. Board Ass'y

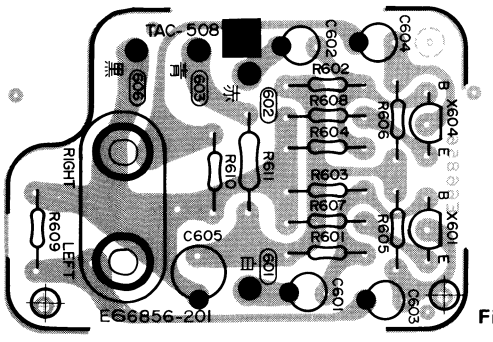


Fig. 17

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X401	2SC1775AV(E)	0.2 W	200 MHz	Silicon	Hitachi
X402	2SC1775AV(E)	"	"	"	"
X601	2SC1775AV(E)	"	"	"	"
X602	2SC1775AV(E)	"	"	"	"

Capacitors

Item No.	Part Number	Rating		Description
C401	QEB41HM-224	0.22 μF	50 V	Low Leak Current Electrolytic
C402	QEB41HM-224	"	"	"
C403	QEW41HA-474	0.47 μF	"	Electrolytic
C404	QEW41HA-474	"	"	"
C405	QEW41CA-476	47 μF	16 V	"
C601	QEB41HM-224	0.22 μF	50 V	Low Leak Current Electrolytic
C602	QEB41HM-224	"	"	"
C603	QEW41HA-474	0.47 μF	"	Electrolytic
C604	QEW41HA-474	"	"	"
C605	QEW41CA-476	47 μF	16 V	"

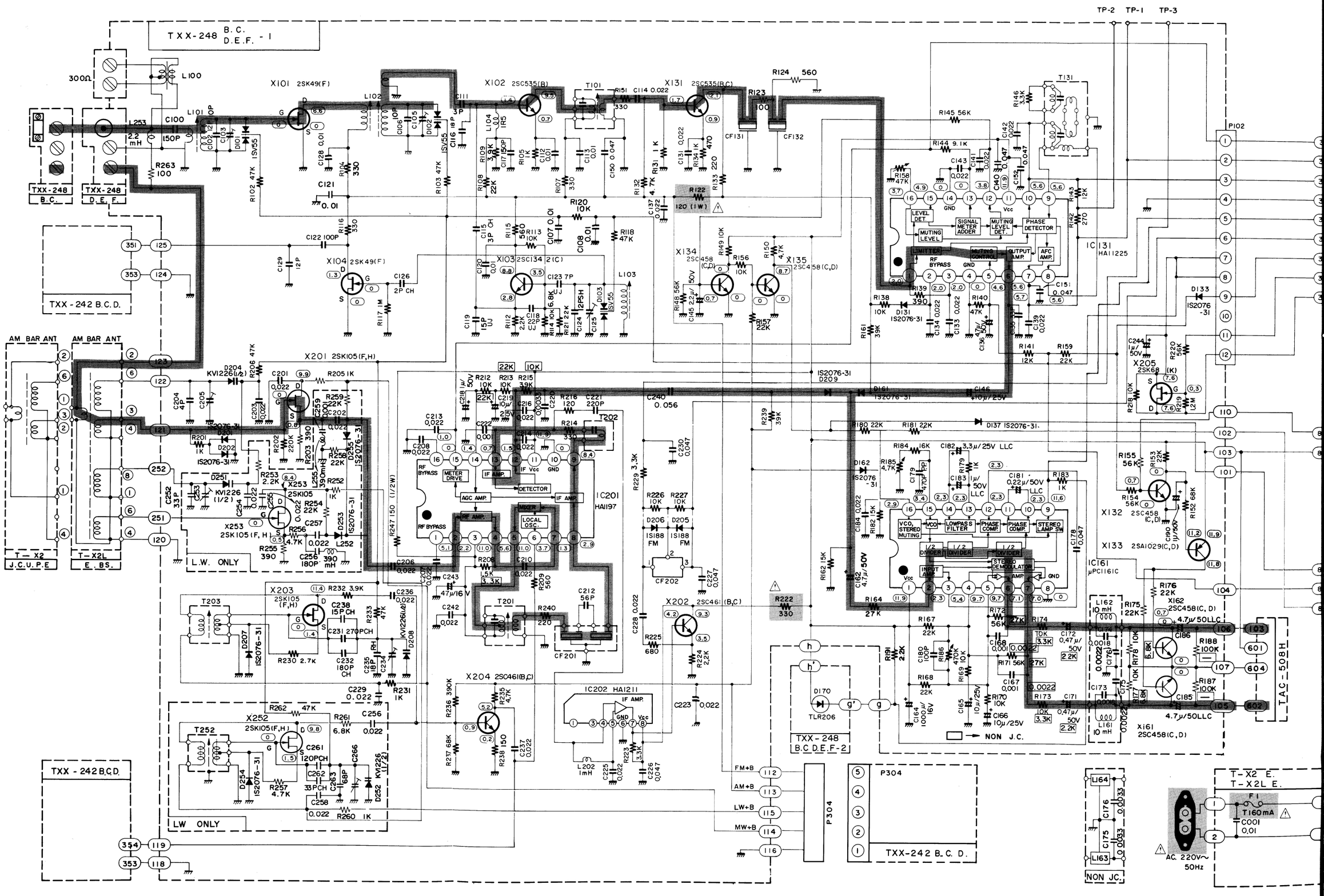
Resistors

Item No.	Part Number	Rating		Description
R601	QRD148J-334S	330 kΩ	1/4 W	Carbon
R602	QRD148J-334S	"	"	"
R603	QRD148J-104S	100 kΩ	"	"
R604	QRD148J-104S	"	"	"
R605	QRD148J-122S	1.2 kΩ	"	"
R606	QRD148J-122S	"	"	"
R607	QRD148J-821S	820 Ω	"	"
R608	QRD148J-821S	"	"	"
R609	QRD148J-104S	100 kΩ	"	"
R610	QRD148J-104S	"	"	"
R611	QRD129J-331	330 Ω	1/2 W	" ⚠

Others

Item No.	Part Number	Rating	Description
	E03591-26D		Pin Jack Ass'y

10. T-X2L Schematic Diagram



Diagram

B C D E F

1 2 3

TXX-248 B.C. D.E.F. - 1

TXX-242 B. C. D.

TXX-248 B.C.D.E.F-2

TXX-242 B. C. D.

T-X2 E. T-X2L E.

TPS-263 B. H.

TAC-508H

NON J.C.

X101 2SK49(F)
X102 2SC535(B)
X131 2SC535(B,C)
X104 2SK49(F)
X103 2SC134 2(C)
X134 2SC458 (C,D)
X135 2SC458(C,D)
X201 2SK105(F,H)
X202 2SC461(B,C)
X204 2SC461(B,C)
X252 2SK105(F,H)
X253 2SK105(F,H)
X203 2SK105 (F,H)
X205 2SK68 (K)
X132 2SC458 (C,D)
X133 2SA1029(C,D)
X161 2SC458(C,D)
X162 2SC458(C,D)
X802 2SD438(F)
X801 2SD330V(E)

IC131 HA11225
IC161 μPC1161C
IC201 HA1197
IC202 HA1211

T101 T131 T201 T202 T203

D131 IS2076-31
D137 IS2076-31
D162 IS2076-31
D170 TLR206
D204 KV1226(L2)
D251 KV1226 (1/2)
D252 KV1226 1/2
D254 IS2076-31
D255 IS2076-31
D207 IS2076-31
D208 KV1226(L2)
D133 IS2076-31
D206 D205 IS188 FM
D804 D805 D806 D801 D802 D803

CF131 CF132 CF201 CF202

P102 P304 P305 P307

L102 L103 L104 L161 L162 L164 L202

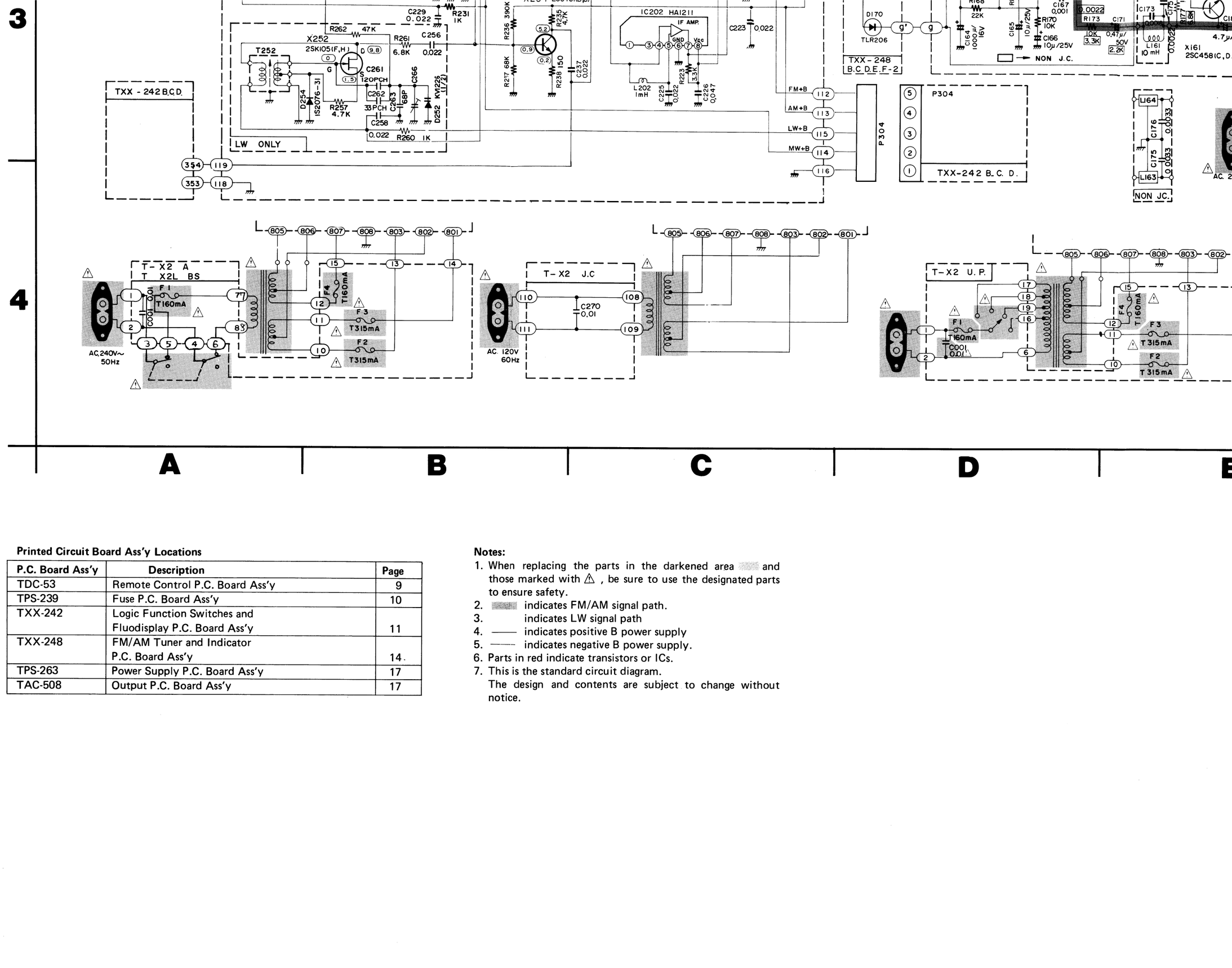
S802

F801 T160mA
F1 T160mA
F2 T315mA
F3 T315mA
F4 T160mA

AC. 220V~ 50Hz

FM+B
AM+B
LW+B
MW+B

TP-2 TP-1 TP-3

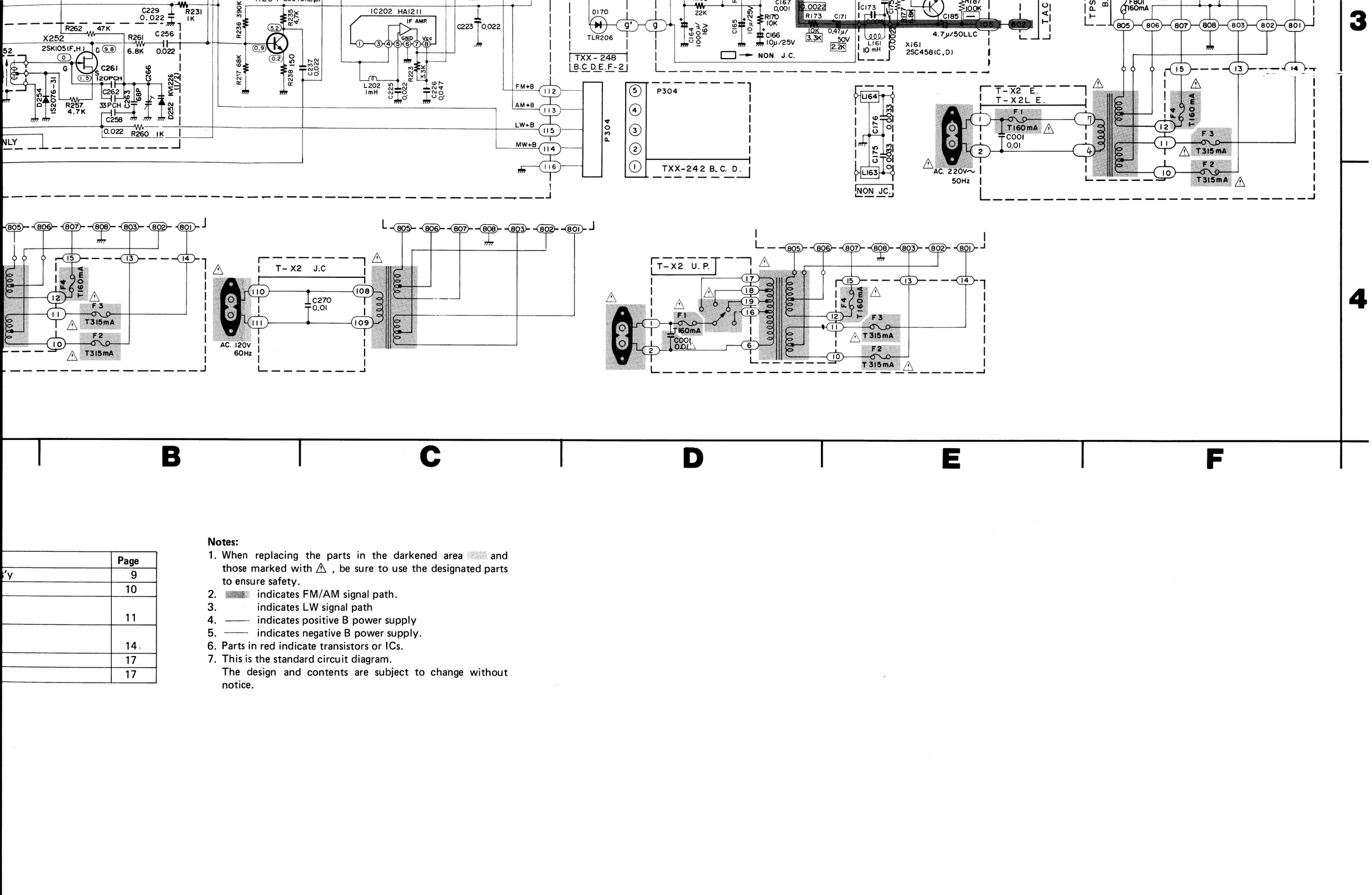


Printed Circuit Board Ass'y Locations

P.C. Board Ass'y	Description	Page
TDC-53	Remote Control P.C. Board Ass'y	9
TPS-239	Fuse P.C. Board Ass'y	10
TXX-242	Logic Function Switches and Fluodisplay P.C. Board Ass'y	11
TXX-248	FM/AM Tuner and Indicator P.C. Board Ass'y	14
TPS-263	Power Supply P.C. Board Ass'y	17
TAC-508	Output P.C. Board Ass'y	17

Notes:

1. When replacing the parts in the darkened area and those marked with ⚠ , be sure to use the designated parts to ensure safety.
2. indicates FM/AM signal path.
3. indicates LW signal path
4. —— indicates positive B power supply
5. —— indicates negative B power supply.
6. Parts in red indicate transistors or ICs.
7. This is the standard circuit diagram.
   The design and contents are subject to change without notice.



	Page
s'y	9
	10
	11
	14.
	17
	17

Notes:

1. When replacing the parts in the darkened area and those marked with ⚠ , be sure to use the designated parts to ensure safety.
2. indicates FM/AM signal path.
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6. Parts in red indicate transistors or ICs.
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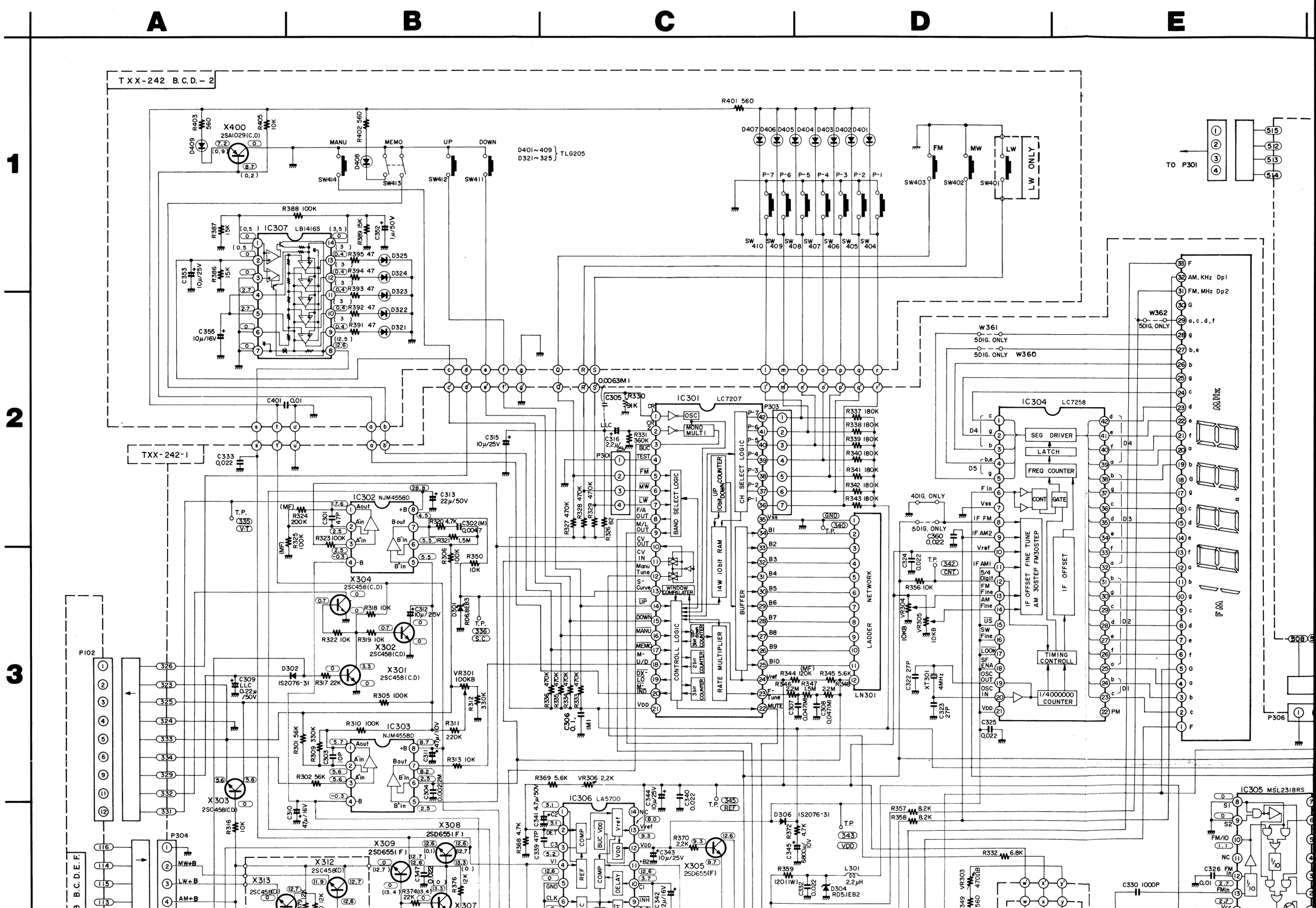

A
B
C
D
E
1
2
3
TXX-242 B.C.D.-2
TXX-242-1
TXX-242 B.C.D.E.F.
X400 2SA1029(C,D)
R403 560
R405 10K
D409
MANU
MEMO
UP
DOWN
R402 560
D408
SW414
SW413
SW412
SW411
D401~409
D321~325
TLG205
R401 560
D407 D406 D405 D404 D403 D402 D401
P-7 P-6 P-5 P-4 P-3 P-2 P-1
FM
MW
LW
LW ONLY
SW403
SW402
SW401
SW 410 SW 409 SW 408 SW 407 SW 406 SW 405 SW 404
TO P301
R388 100K
IC307 LB1416S
R387 15K
R389 15K
C352 1μ/50V
C353 10μ/25V
R386 15K
C355 10μ/16V
R395 47
R394 47
R393 47
R392 47
R391 47
D325
D324
D323
D322
D321
C401 0.01
C333 0.022
C315 10μ/25V
C305 R330 91K
IC301 LC7207
OSC
MONO MULTI
BUC
TEST
FM
MW
LW
F/A OUT
M/L OUT
CV OUT
CV IN
Manu Tune
S-Curve
UP
DOWN
MANU
MEMO
M-U/D
DX-LO
M-IND
VDD
BAND SELECT LOGIC
UP DOWN COUNTER
CH SELECT LOGIC
14W 10bit RAM
BUFFER
LADDER NETWORK
LN301
CONTROLL LOGIC
RATE MULTIPLIER
R337 180K
R338 180K
R339 180K
R340 180K
R341 180K
R342 180K
R343 180K
R327 470K
R328 470K
R329
R326 82
R336 470K
R335 470K
R334 470K
R333 470K
C306 0.1 (M)
R344 120K (MF)
R345 5.6K
R346 2.2M
R347 1.5M
R348 2.2M
C307 0.047(M)
C308 0.047(M)
IC302 NJM4558D
R324 200K (MF)
R325 100K (MF)
C301 47P
R323 100K
R320 4.7K
C302(M) 0.0047
R321 1.5M
R306 100K
R350 10K
C313 22μ/50V
X304 2SC458(C,D)
R318 10K
C312 10μ/25V
R322 10K
R319 10K
X302 2SC458(C,D)
X301 2SC458(C,D)
D301 RD6.8EB3
T.P. 336 S.C.
D302 IS2076-31
R317 22K
C309 LLC 0.22μ/50V
VR301 100KB
R312 330K
R305 100K
IC303 NJM4558D
R310 100K
R311 220K
R313 10K
C311 47μ/10V
R301 56K
R309 330K
C303 10P
R302 56K
C310 47μ/16V
C304 0.0022M
X303 2SC458(C,D)
R316 10K
X308 2SD655(F)
X309 2SD655(F)
X312 2SC458(D)
X313 2SC458(D)
R374 22K
R376 12K
X307
C347 0.022
C342 2.2μ/16V
C341 4.7μ/50V
IC306 LA5700
R369 5.6K
VR306 2.2K
C344 10μ/25V
C340 0.022
T.P. 345 REF
R368 4.7K
C339 47P
C343 10μ/25V
X305 2SD655(F)
R370 2.2K
D306 IS2076-31
R372 4.7K
C345 6800P/10V
T.P. 343 VDD
R359 120(1W)
C331 0.022
L301 2.2μH
D304 RD5.1EB2
R357 8.2K
R358 8.2K
R332 6.8K
VR303 470KB
R349 560
C330 1000P
C326 FM in
0.01
FMin
IC304 LC7258
SEG DRIVER
LATCH
FREQ COUNTER
CONT
GATE
IF OFFSET FINE TUNE AM 30STEP FM30STEP
IF OFFSET
TIMING CONTROLL
1/4000000 COUNTER
4DIG. ONLY
5DIG. ONLY
C360 0.022
C324 0.022
T.P. 342 CNT
R356 10K
VR304 10KB
VR305 10KB
C322 27P
XT301 4MHz
C323 27P
C325 0.022
W361 5DIG. ONLY
5DIG. ONLY W360
W362 5DIG. ONLY
F
AM, KHz Dp1
FM, MHz Dp2
G
a,c,d,f
g
b,e
b
g
c
d
e
f
a
b
G
g
c
d
e
f
a
b
g
c
d
e
f
a
b
c
d
e
f
g
a
b
c
d
e
f
g
a
b
c
F
D4
D5
D3
D2
D1
MHz
FM
PM
P306
P308
P102
P304
P303
S1
S2
FM/10
NC
FMin
IC305 MSL2318RS
TO P301

B C D E F

1 2 3

TDC-53A

MANU MEMO UP DOWN

D401~409 } TLG205
D321~325 }

SW414 SW413 SW412 SW411

D408 R402 560

R401 560

D407 D406 D405 D404 D403 D402 D401

P-7 P-6 P-5 P-4 P-3 P-2 P-1

SW 410 SW 409 SW 408 SW 407 SW 406 SW 405 SW 404

FM MW LW LW ONLY

SW403 SW402 SW401

TO P301

515 512 513 514

R388 100K

IC307 LB1416S

R389 15K C352 1μ/50V

R395 47 D325
R394 47 D324
R393 47 D323
R392 47 D322
R391 47 D321

W361 5DIG. ONLY
5DIG. ONLY W360
W362 5DIG. ONLY

33 F
32 AM, KHz Dp1
31 FM, MHz Dp2
30 G
29 a,c,d,f
28 g
27 b,e
26 b
25 g
24 c
23 d
22 e
21 f
20 a
19 b
18 G
17 g
16 c
15 d
14 e
13 f
12 a
11 b
10 g
9 c
8 d
7 e
6 f
5 G
4 a
3 b
2 c
1 F

MHz

IC304 LC7258

SEG DRIVER
LATCH
FREQ COUNTER
CONT
GATE
IF OFFSET FINE TUNE AM 30STEP FM30STEP
IF OFFSET
TIMING CONTROLL
1/4000000 COUNTER

D4 D5 D3 D2 D1

F in Vss IF FM IF AM2 Vref IF AM1 5/4 Digit FM Fine AM Fine US SW Fine LOOK SF ANA OSC OUT OSC IN VDD

4DIG. ONLY
5DIG. ONLY
C360 0,022
C324 0.022
T.P. 342 CNT
R356 10K
VR304 10KB
VR305 10KB
C322 27P
XT301 4MHz
C323 27P
C325 0,022

FM

508 509 511 510 507 506 505 504 503 502 501

P306 1 2 3 4 1 2 3 4 5 6 7

TO P303

IC301 LC7207

OSC MONO MULTI BUC TEST FM MW LW F/A OUT M/L OUT CV OUT CV IN Manu Tune S-Curve UP DOWN MANU MEMO M-U/D DX-LO M-IND VDD

BAND SELECT LOGIC
UP DOWN COUNTER
CH SELECT LOGIC
14W 10bit RAM
BUFFER
LADDER NETWORK
CONTROLL LOGIC
WINDOW COMPARATER
RATE MULTIPLIER
2bit COUNTER
3bit COUNTER

B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 Vref F-Tune MUTE

P-7 P-6 P-5 P-4 P-3 P-2 P-1 Vss

P303 P301

R337 180K R338 180K R339 180K R340 180K R341 180K R342 180K R343 180K

R327 470K R328 470K R329 470K R326 82

R336 470K R335 470K R334 470K R333 470K

C306 0.1 (M)

R344 120K (MF) R345 5.6K R346 2.2M R347 1.5M R348 2.2M

C307 0.047(M) C308 0.047(M)

GND (340) T.P.

LN301

C305 R330 91K

C316 2.2μ/25V

R331 360K

C315 10μ/25V

0.0063(M)

IC302 NJM4558D

Aout A'in A'in -B B'in B'in +B Bout

R324 200K (MF) R325 100K (MF)

C301 47P

R323 100K

C313 22μ/50V

R320 4.7K C302(M) 0.0047

R321 1.5M

R306 100K R350 10K

X304 2SC458(C,D)

R318 10K C312 10μ/25V

D301 RD6.8EB3 T.P. 336 S.C.

X302 2SC458(C,D)

R322 10K R319 10K

X301 2SC458(C.D)

D302 IS2076-31 R317 22K

VR301 100KB R312 330K

R305 100K

IC303 NJM4558D

R310 100K R311 220K R313 10K

R309 330K R301 56K R302 56K

C303 10P C311 4.7μ/10V C304 0.0022M C310 4μ/16V

X308 2SD655(F)

X309 2SD655(F)

X312 2SC458(D)

R374(3.4) 22K R376 12K

X307

R369 5.6K VR306 2.2K

IC306 LA5700

C341 4.7μ/50V C339 47P C344 10μ/25V C340 0.022

T.P. 345 REF

R368 4.7K

BUC VDD Vref VDD REF COMP DELAY

NC Vref VDD +B2 CI INH

DET C2 C3 VI GND CLK DATA

C343 10μ/25V

X305 2SD655(F)

R370 2.2K

D306 IS2076-31 T.P. 343 VDD

R372 4.7K C345 680(M) 10V

R359 120(1W) C333 0.022

L301 2.2μH

D304 RD5.1EB2

R357 8.2K R358 8.2K

R332 6.8K

VR303 470Ω

R349 560

C330 1000P

IC305 MSL2318RS

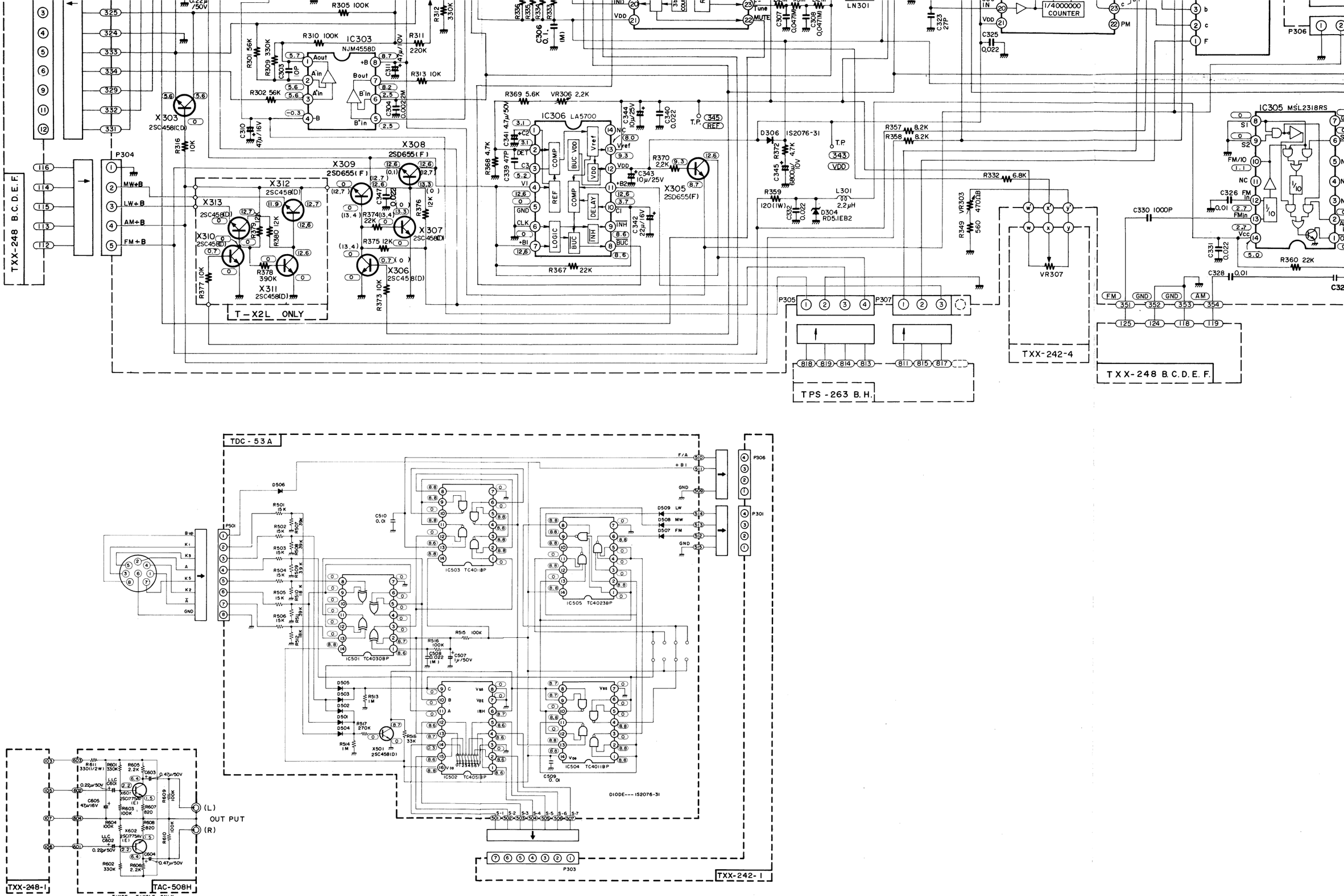
S1 S2 FM/10 NC FM in FMin AM in AMin GND SWin NC NC NC

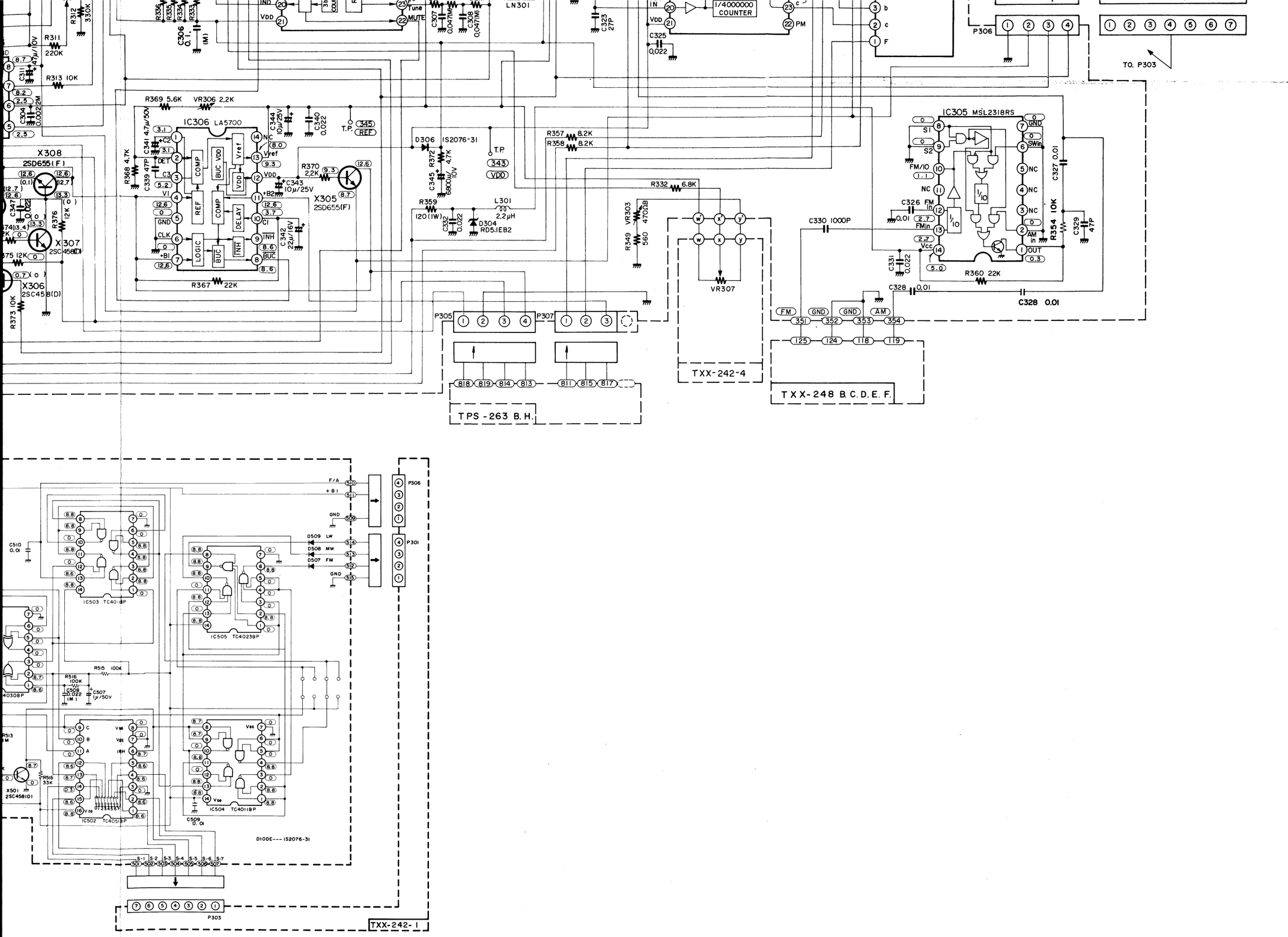
C326 FM in 0.01

C327 0.01

R354 10K

C329 47P


TXX-248 B.C.D.E.F.
P304
MW+B
LW+B
AM+B
FM+B
IC303 NJM4558D
IC306 LA5700
X303 2SC458(C,D)
X305 2SD655(F)
X306 2SC458(D)
X307 2SC458(D)
X308 2SD655(F)
X309 2SD655(F)
X310 2SC458(D)
X311 2SC458(D)
X312 2SC458(D)
X313 2SC458(D)
T-X2L ONLY
P305
P307
TPS-263 B.H.
TXX-242-4
TXX-248 B.C.D.E.F.
IC305 MSL2318RS
VR307
P306
TDC-53A
P501
P301
P303
IC501 TC4030BP
IC502 TC4051BP
IC503 TC4011BP
IC504 TC4011BP
IC505 TC4023BP
D506
D505
D503
D502
D501
D504
D509 LW
D508 MW
D507 FM
X501 2SC458(D)
DIODE---IS2076-31
TXX-248-1
TAC-508H
T-X2E, T-X2LE ONLY
(L) OUT PUT (R)
TXX-242-1


IC306 LA5700
IC305 MSL2318RS
X308 2SD655(F)
X307 2SC458(D)
X306 2SC458(D)
X305 2SD655(F)
D306 IS2076-31
D304 RD5.1EB2
L301 2.2μH
VR307
TXX-242-4
TXX-248 B. C. D. E. F.
TPS-263 B. H.
P305
P306
P307
TO. P303
1/4000000 COUNTER
LN301

IC503 TC4011BP
IC505 TC4023BP
IC502 TC4051BP
IC504 TC4011BP
DIODE--- IS2076-31
P303
P306
P301
TXX-242-1

11. Accessories List

Item No.	Part Number	Description	Q'ty
1	See next page	Power Cord	1
2	E03479-001B	Signal Cord	1
3	E03614-004	FM Antenna	1
4	See next page	Warranty Card	1
5	See next page	Instruction Book	1

12. Packing Materials and Part Numbers

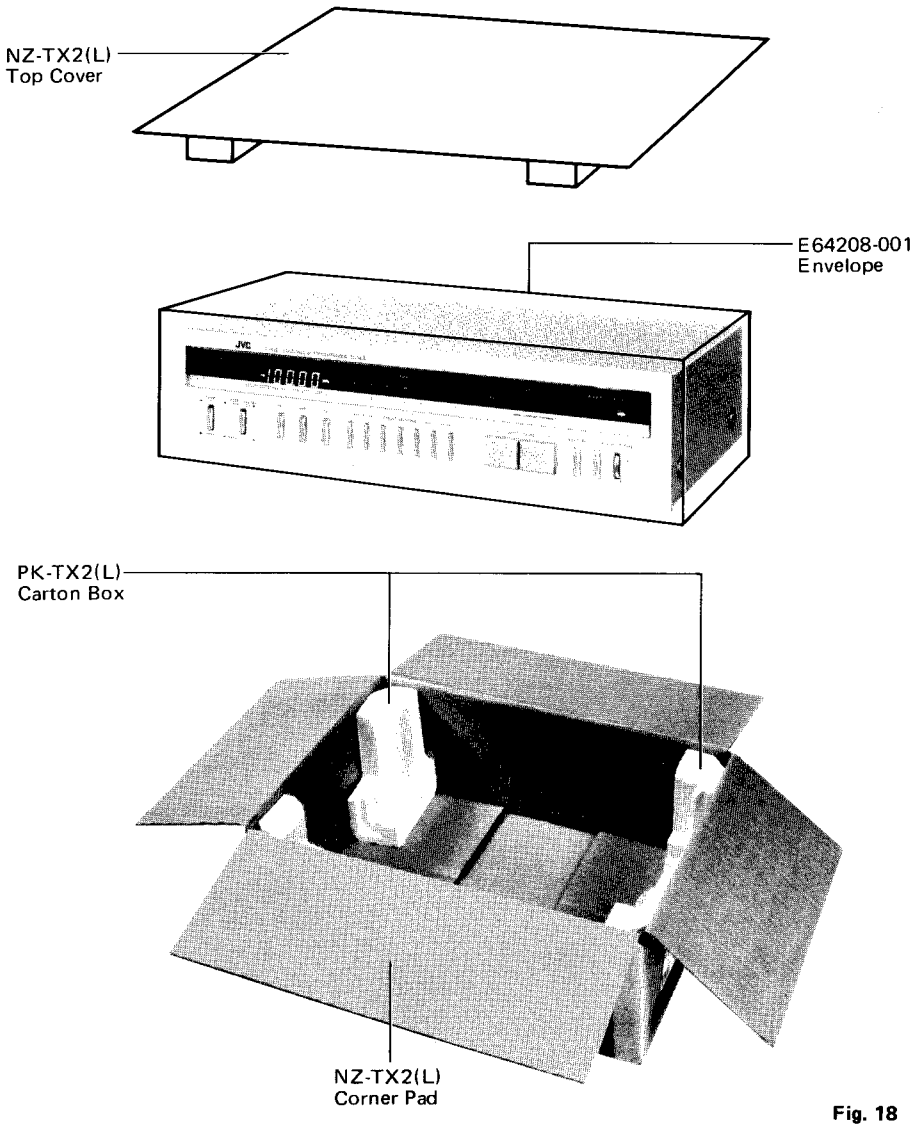


Fig. 18

13. Parts List with Specified Numbers for Designated Areas

Page	Item No.	Description	Europe	U.K.
10	9-(2)	Primary C. Cap	QFZ9007-103	QFZ9007-103BS
5	5-(1)	Power Trans	E03042-31C	E03042-31EBS
5	5-(1)	Pin Jack Ass'y	–	E03591-26D
11	9-(3)	Logic C.B. Ass'y	TXX-242E	TXX-242D
17	9-(6)	Output C.B. Ass'y	TAC-508H	–
10	9-2	Fuse C.B. Ass'y	TPS-239C	TPS-239CBS
		Fuse F801	QMF51A2-R16L (T160 mA)	QMF51A2-R16LBS (T160 mA)
		F1	QMF51A2-R16L	QMF51A2-R16LBS
		F2	QMF51A2-R315L (T315 mA)	QMF51A2-R315LBS (T315 mA)
		F3	QMF51A2-R315L	QMF51A2-R315LBS
		F4	QMF51A2-R16L	QMF51A2-R16LBS
5	5-(3)	Rating Plate	E66555-005	E66555-006BS
20	11	Power Cord	QMP3950-183	QMP9017-009BS
5	5-(3)	Seesaw SW	–	QSE2235-203BS
5	5-(3)	AC Male Connector	QMC0239-002	QMC0239-002BS
5	5-(3)	Rear Panel	E23585-001	E23585-002
20	11	Instruction Book	E30580-855A	E30580-855ABS
20	11	Warranty Card	–	BT20013C

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